3 MODEL CALIBRATION AND SENSITIVITY ANALYSIS

3.1 Calibration

During the calibration period a small aquifer response field test was done at the lakes to test potential impacts at the fish farms. Alligator Chain was dropped from 63.8 feet to about 62.0 feet from April 1 to April 14. Gentry was dropped from 61.4 feet to 59.45 feet from April 1 to April 14. A drop of two feet from elevation 64.0 feet NGVD to 62.0 feet is a normal feature of the regulation schedules for the Alligator Chain. However, this drop normally takes 2.5 months instead of two weeks as in the aquifer response test temporary deviation. The normal regulation schedule, actual lake stages, Structure S-60 gate openings, and rainfall are shown in Figure 16 on page 18. An important factor to note is the low rainfall during this period.

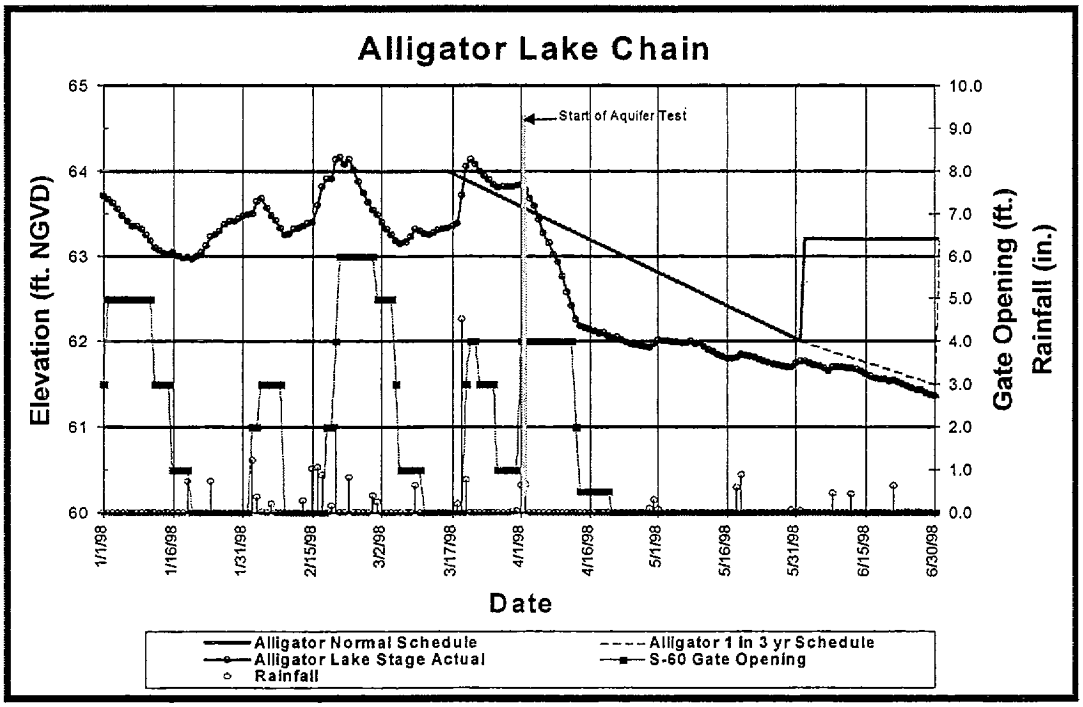


Figure 16 Response field test information

A series of transient runs were made to calibrate the lake Alligator model to daily observed water-levels for the period November 1997 – May 1998. Figure 17 on page H-19 shows the observation well locations. Wells 1-19 were installed by the SFWMD to provide data with which to calibrate this model. Where two wells are located at the same site, there is one 10 foot and one 20 foot well. At the single well sites the only 20 foot wells were installed. Taped-down water-level readings were taken an average of twice weekly from November, 1997 through February, 1998. In February, transducers and telemetry equipment was installed at these sites to provide continuous water-level readings. Well 20 is USGS well OS-181. It is the only long-term monitor well within the model area.

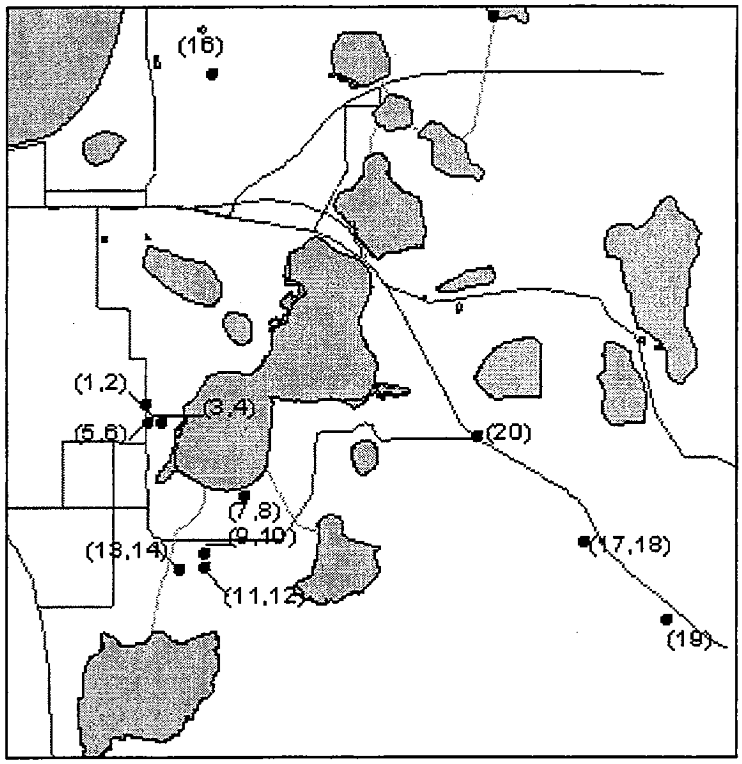


Figure 17 Location of Groundwater Monitoring Wells

The hydrographs for the model calibration can be found in Appendix I. It can be seen from the hydrographs that the model tracks pretty well with the observed data. In some instances a water-level spike may be seen in one of the traces (observed or simulated) that does not occur in the other. For the most part this discrepancy is readily explained by looking at the rainfall pattern, either a rain event occurred at the observation well that did not occur at the nearest rain gauge, or vice versa. This illustrates both the sensitivity of the model to rainfall, and the variability of that parameter within the model domain.

There are a couple of instances in which deviations between modeled and observed water-levels can not be explained by rainfall, such as the observation wells located at Blackwater fishery (wells 1 & 2). Figure 18 on page H-21 shows the hydrographs for these two wells. Note that the model was tracking well with the observed data until around the end of March, after which the two get progressively further apart. This period of deviation corresponds to an unusual spring dry-spell for the region. There was essentially no significant rainfall from the beginning of April till early June. Although this was true for the entire model domain, the same deviation was not noted in other observation wells, most notably the Simmons wells (3 – 6) which lie between Blackwater and Alligator Lake less than a half a mile away. It was believed that the discrepancy was due to the local drainage effects of the small canal/creek which ran through Blackwater, and was not initially included in the model. To test this theory, the canal was included in the model (Figure 19 on page H-21). It was found that while the results were certainly improved, particularly in the deeper well, the discrepancy still existed. This was not unexpected, because of the difference in scale between the model (200m x 200m) and the channel we are attempting to represent (~ 9m). It was important, however, to represent the channel accurately because it free-flows into Alligator Lake, and has a significant impact on water-levels in the fish farm. A higher resolution model (25m x 25m) was constructed for the area immediately around Blackwater (Figure 20 on page H-20).

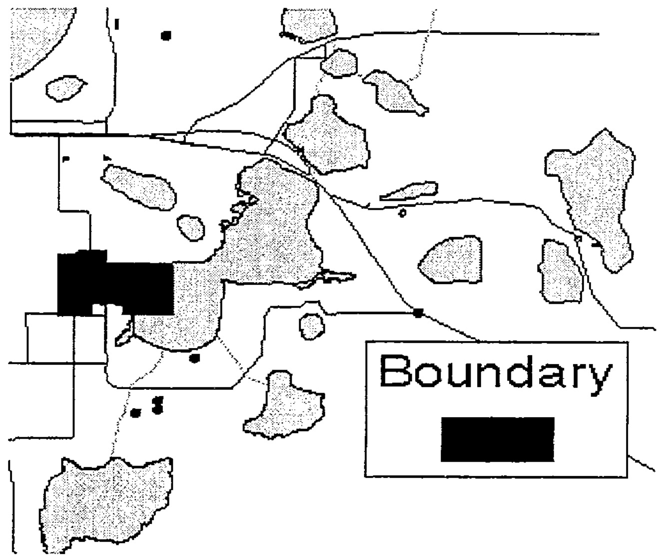


Figure 20 Sub-regional Model

Head boundaries for the sub-regional model were extracted directly from the regional model. All model layer boundaries and aquifer hydraulic properties were re-gridded directly from the regional model arrays. Land use and soil discretization are input to the model as polygon coverages, so they were not impacted by the scale change. Land-surface topography was re-interpolated from the original point and contour data. Figure 21 on page H-22 shows

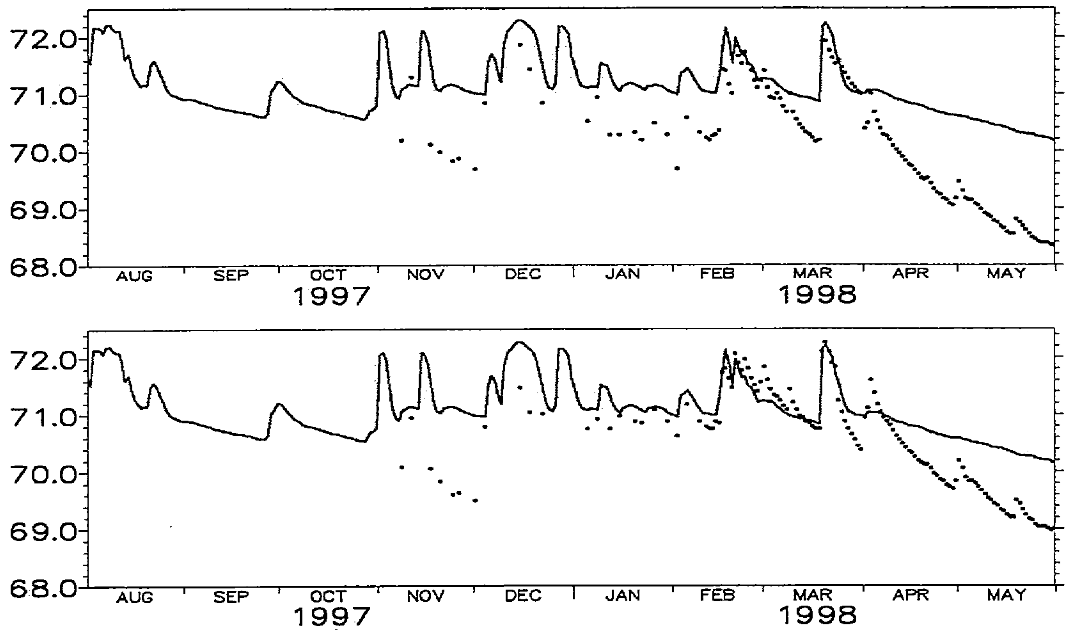


Figure 18 Predicted water-levels at Blackwater Farm (no canal)

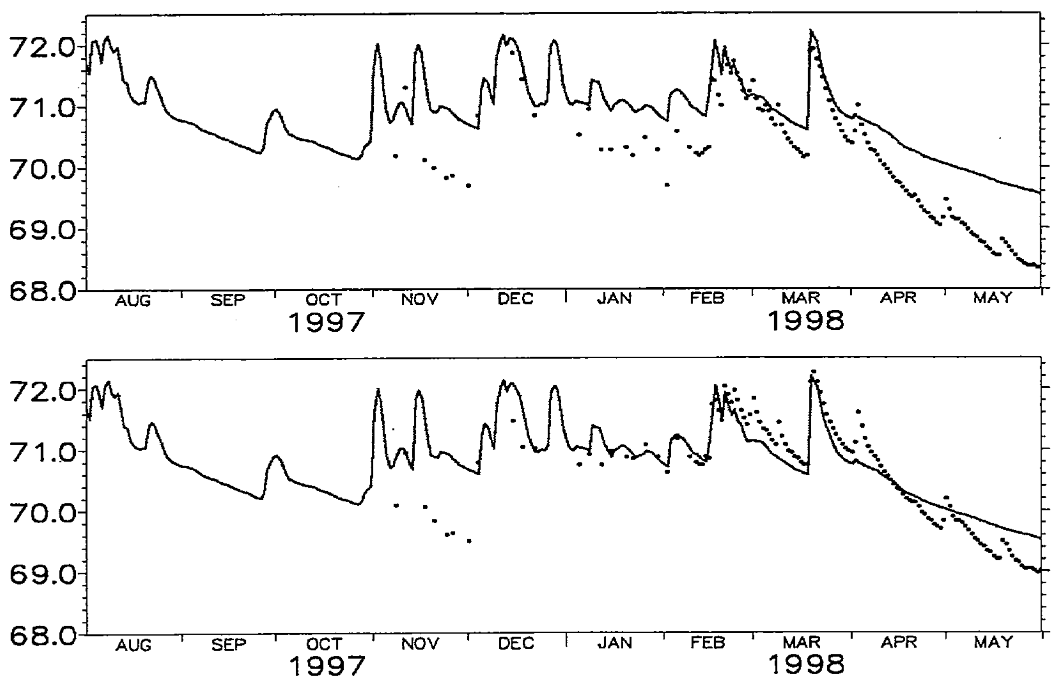


Figure 19 Predicted water-levels at Blackwater Farm (canal included)

the new simulated hydrograph at Blackwater (red) in relation to the regional model prediction (green) and observed values (dots). It is observed from this that the sub-regional model is much more suitable for evaluating the effects of local drainage features than the regional model. This pair of graphs also serves to highlight the differences between the 10 and 20 foot wells. The shallow well is influenced much more strongly by the drainage feature that is the deep well. The well borings at this site indicate a thick sequence of hardpan between 5 and 15 feet below land-surface which leads to a difference in water-levels between the two wells. A similar feature was noted some other wells (e.g. 17,18). At most other locations, however, there is no significant difference between the shallow and deep wells. Where the hardpan occurs, the deeper well will be more indicative of the regional water table, and upper well more indicative of very local conditions. In order to simulate both conditions equally well, it would be necessary to divide the surficial aquifer into multiple layers. Given the discontinuous nature of the hardpan layer, and lack of data to describe its occurrence, a multiple layer system is not practical at this time.

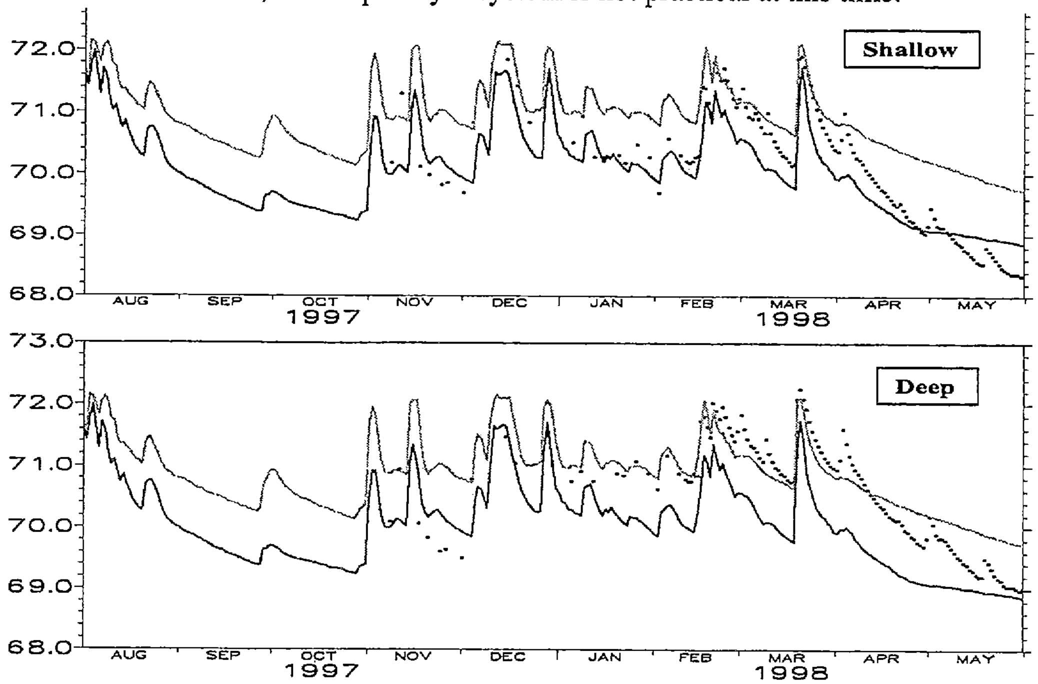


Figure 21 Predicted water levels at Blackwater Farm (regional vs. sub-regional model)

Since the model is to be used to simulate the effect of lake drawdowns on the regional water table, the calibration is biased towards the deeper wells. Calibration was considered satisfactory if the pattern match of the hydrographs is reasonable and the mean difference between observed and predicted water-levels fell within one standard deviation of the variation in observed water-levels within the calibration period. This criteria was met at all of the observation wells. Summary information for each well is found in Table 4 on page H-23.

Table 4: Average difference between observed and predicted values at observation wells.

Well #	Well ID Name	Total Depth	Observation Well Statistics [ft.]		Avg. Difference From Observed
			Std. Deviation	Range	
1	Blackwater	20'	0.96	3.50	0.35^{R} / 0.73^{S}
2	"	10'	1.07	3.74	0.67^{R} / 0.22^{S}
3	Simmons 1	20'	1.15	5.18	0.48
4	"	10'	1.10	4.29	0.47
5	Simmons 2	20'	1.07	4.06	0.24
6	"	10'	1.09	4.00	0.41
7	Beekman	20'	1.00	3.41	0.40
8	"	10'	1.03	3.77	0.40
9	Moonlight 1	20'	0.93	3.67	0.35
10	"	10'	0.93	3.74	0.20
11	Moonlight 2	20'	0.68	2.89	0.52
12	"	10'	0.66	2.56	0.53
13	Chestnut	20'	1.06	4.79	0.42
14	"	10'	1.04	4.92	0.39
16	Mako	20'	0.90	3.15	0.21
17	Castelli	20'	0.58	2.20	0.29
18	"	10'	0.53	2.03	0.50
19	Exotic	20'	0.34	1.15	0.18
20	OS-181	16'	0.71	3.58	0.52

^{R} = Regional Model

^{S} = Sub-Regional Model

Most modifications to achieve calibration were made in the areas of Horizontal Hydraulic Conductivity in layer one and the ET surface elevation. Although the model contains three layers, even with a significant downward head gradient, the low horizontal and vertical conductance values in layer 2, the Hawthorn Confining Beds, effectively create a no-flow barrier between the Surficial and Floridan aquifer systems. There is some empirical evidence for interconnection between these two aquifers, most notably at Lake Jackson to the south of the model area. The interconnection takes the form of sand-filled conduits formed by collapsed sinkholes. In the absence of such features the aquifer interconnection is extremely minimal. Lacking evidence of interconnectivity within the model domain, representative regional values for horizontal and vertical conductivity (communication David Butler) were used in the model. Consequently, the model responds as if it were one layer, and is not sensitive to reasonable changes in hydraulic conductivity within the other layers.

The topographic surface elevations used in the model were interpolated from point values from the USGS quad maps of the area and surveyed elevations at the observation wells (Figure 22 on page H-24). The model was sensitive to these values in relation to the parameters of actual ET, runoff and drainage. It was necessary to modify the topography array to capture some hydrologic features that were visible in the original contour maps but not in the interpolated surface. Also, where the interpolation did not hold the elevation value at the observation well, the cell containing the well was edited to reflect the surveyed value.

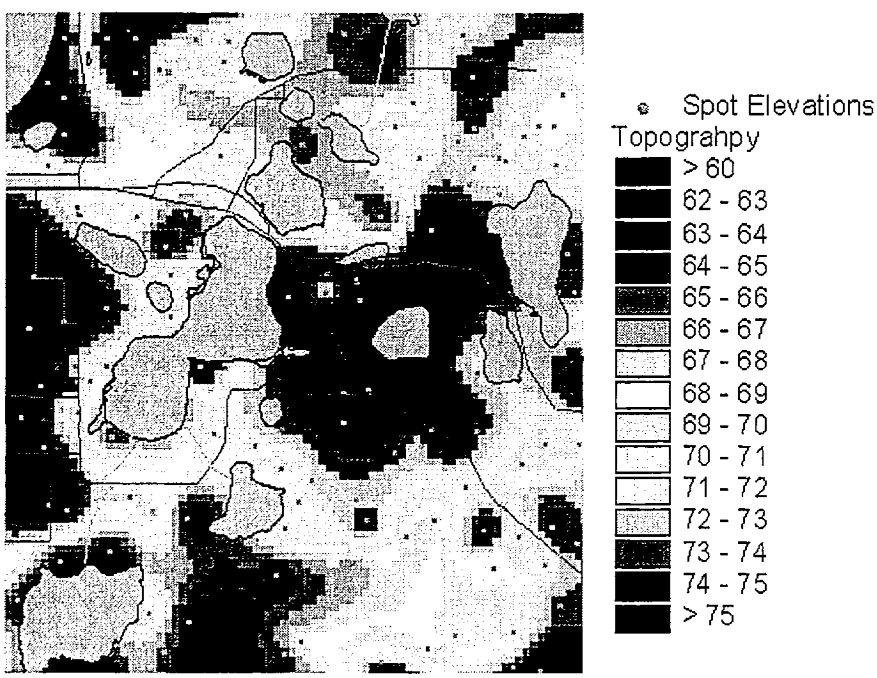


Figure 22 Topographic Surface

3.2 Sensitivity Analysis

Some degree of sensitivity analysis was performed on most of the input variables during the course of calibration. As previously stated, the model is most sensitive to horizontal hydraulic conductivity in the Surficial aquifer. The calibrated hydraulic conductivity values in layer one range from 8 to 10 times the initial slug test values, as was shown in Figure 6 on page H-9. Figure 23 on page H-26 illustrates the sensitivity to hydraulic conductivity by showing the difference in predicted hydrographs at three geographically disparate wells using 1) the calibrated hydraulic conductivity, 2) five times the calibrated values, and 3) One fifth the calibrated values. In the wells shown, both hydraulic conductivity and sensitivity to that parameter were lowest at Mako. In that area there was little difference between predicted water-levels at calibration level and 1/5 calibration level hydraulic conductivity, but at the higher conductivity there is a significant deviation between observed and predicted water levels as the calibration moved into the spring drought. The effects at Moonlight and OS-181 are similar in trend, but even more pronounced. This implies that while the actual hydraulic conductivity may be slightly lower than the calibrated values it is unlikely that they are very much higher. This is a significant implication because the purpose of the model is to define the area of impact of a lake drawdown on the water table. The area of possible impact will increase with increasing hydraulic conductivity. Since the sensitivity analysis indicates the unlikelihood of layer one conductivity being any larger that portrayed in the model, the simulations should be presenting a conservative estimate of the possible impact area.

Other than hydraulic conductivity, there was most concern about the sensitivity of model results to boundary conditions. When the boundaries for the model were originally formulated they were defined with the objective of assuring no boundary influence on predicted heads at the fish farms nearest the lake, where the preliminary analysis had indicated some possibility of impact. As the project progressed, the more distant fish farms began to become an issue for the drawdown project leading to some concern as to potential boundary influences on predictions there. Sensitivity to boundary conditions was tested in two ways. First, where a constant head boundary was defined on the western and southern ends of the model (see Figure 7 on page H-11) the boundary was raised and lowered a foot and the calibration simulation re-run for each condition to look for changes at the observation locations. There were none. The second test was to address the more troublesome no-flow boundary on the eastern edge of the model. For this test, the active area of the model was extended to the edge of the gridded area, and a constant head was applied two feet below land surface. The results indicated some degree of boundary influence at the two easternmost fish farms Castelli and Exotic. Figure 24 on page H-27 shows the area of maximum difference, at Exotic Farm. The question then arises as to whether these boundary effects had any influence on the results of the predictive simulations. This was tested by re-running the most extreme simulation, the 80 – 81 drought, with the extended eastern boundary. The simulation was made with and without the drawdown. It was found that although there were some differences in the

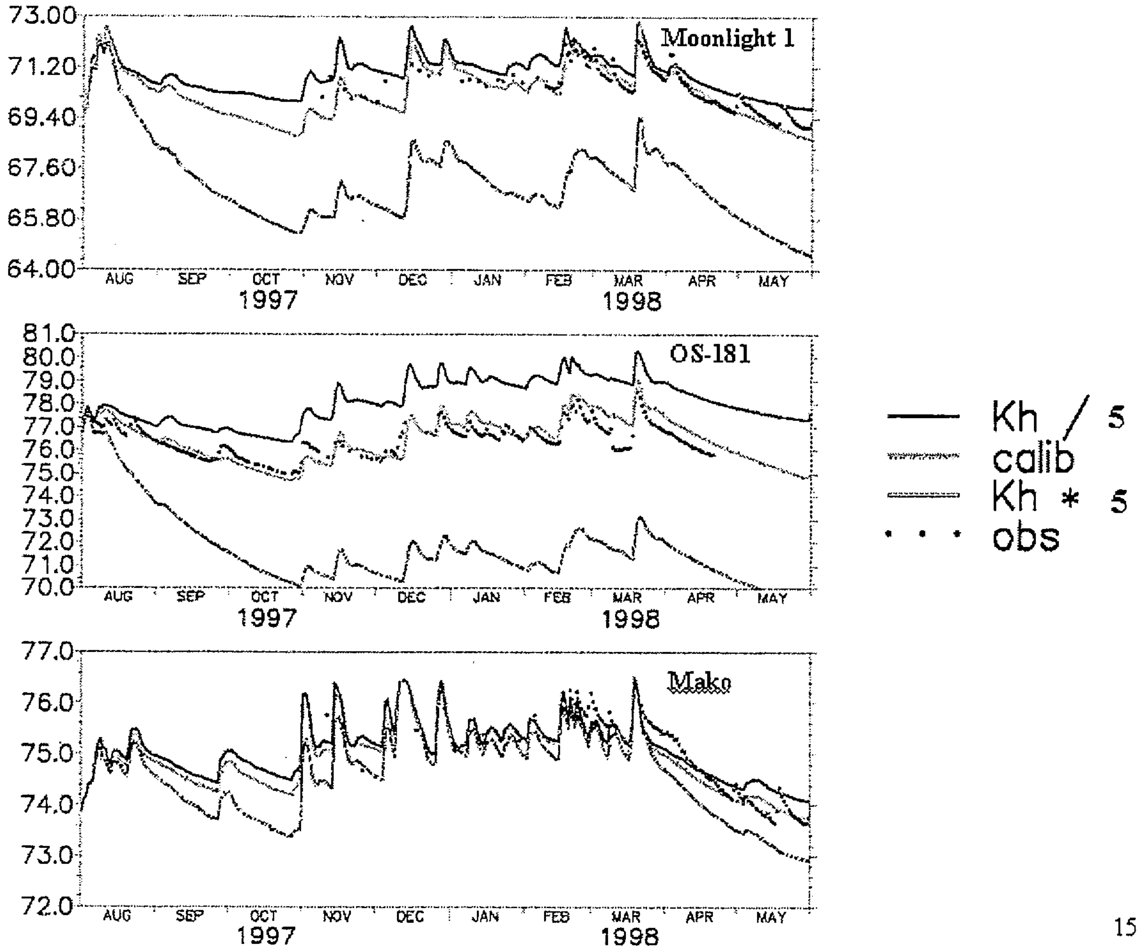


Figure 23 Effect of Changing Hydraulic Conductivity

simulated drawdown from what had been predicted with the original boundary, the conclusions drawn from the original simulations did not alter. As a consequence it was concluded that although there is room for improvement in the eastern boundary of the model, its deficiencies are not sufficient to prevent successful application of the model for the intended use.

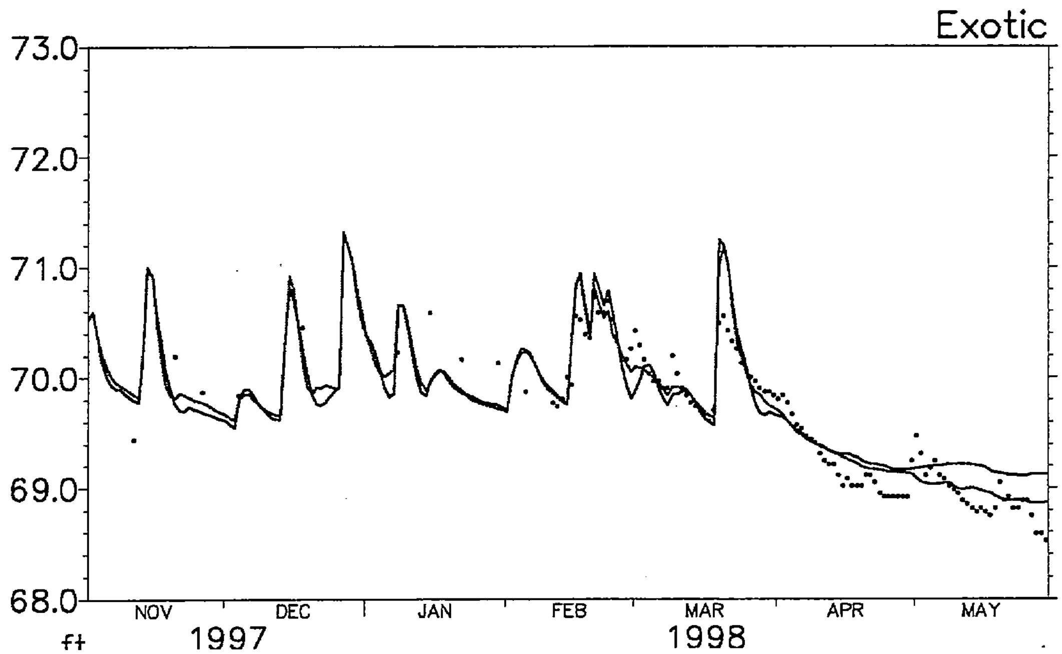


Figure 24 Boundary Effects

3.3 Verification

A model run was made for the time period of January 1980 to August 1981. This was a period of severe drought within the model area. The simulation was made for two purposes. The first purpose was to evaluate the effects of a drawdown under severe drought conditions. The results of this analysis appear in the document *Analysis of Projected Impacts of the Alligator Chain Drawdown Project on the Surrounding Water Table Aquifer, July 28, 1998*. The second purpose was to provide an independent verification of the model calibration. The verification is quite limited, because there was only one monitor well in operation at that time, but the results of that well are presented

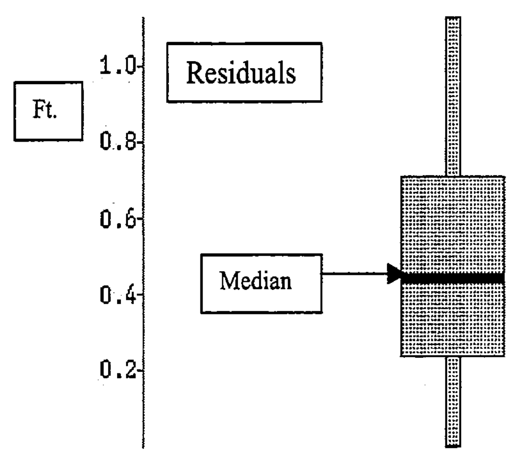


Figure 25 Distribution of residuals at OS-181

in Figure 25 on page H-27 and Figure 26 on page H-28. The mean difference between simulated and observed water levels is 0.48 feet, with a median difference of 0.44 feet and maximum of 1.14 feet. The accuracy of simulation during the verification is actually slightly better than it was during calibration. It is also seen (Figure 26 on page H-28) that the simulated water-levels match the observed data quite well. Where deviations occur, they are easily explained by differences in rainfall. Only one rainfall station (Pine Island) was available for the 1980 – 1981 run, and it is several miles south of OS-181. While it would be presumptuous to make sweeping generalizations based on only one observation, the results of the verification are encouraging and serve to lend confidence to the model results.

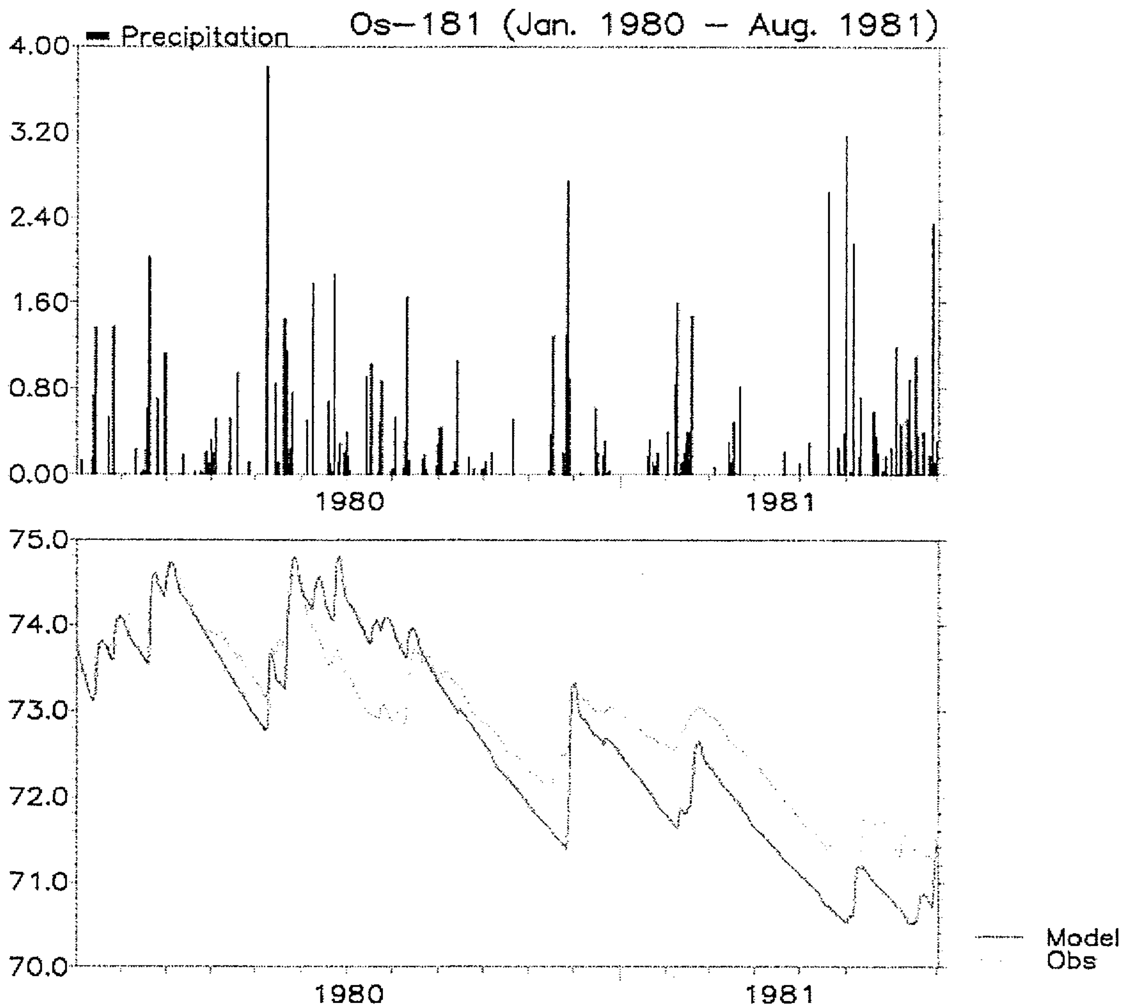


Figure 26 Results of Verification Run

Appendix I. Model Calibration - Spring 1998

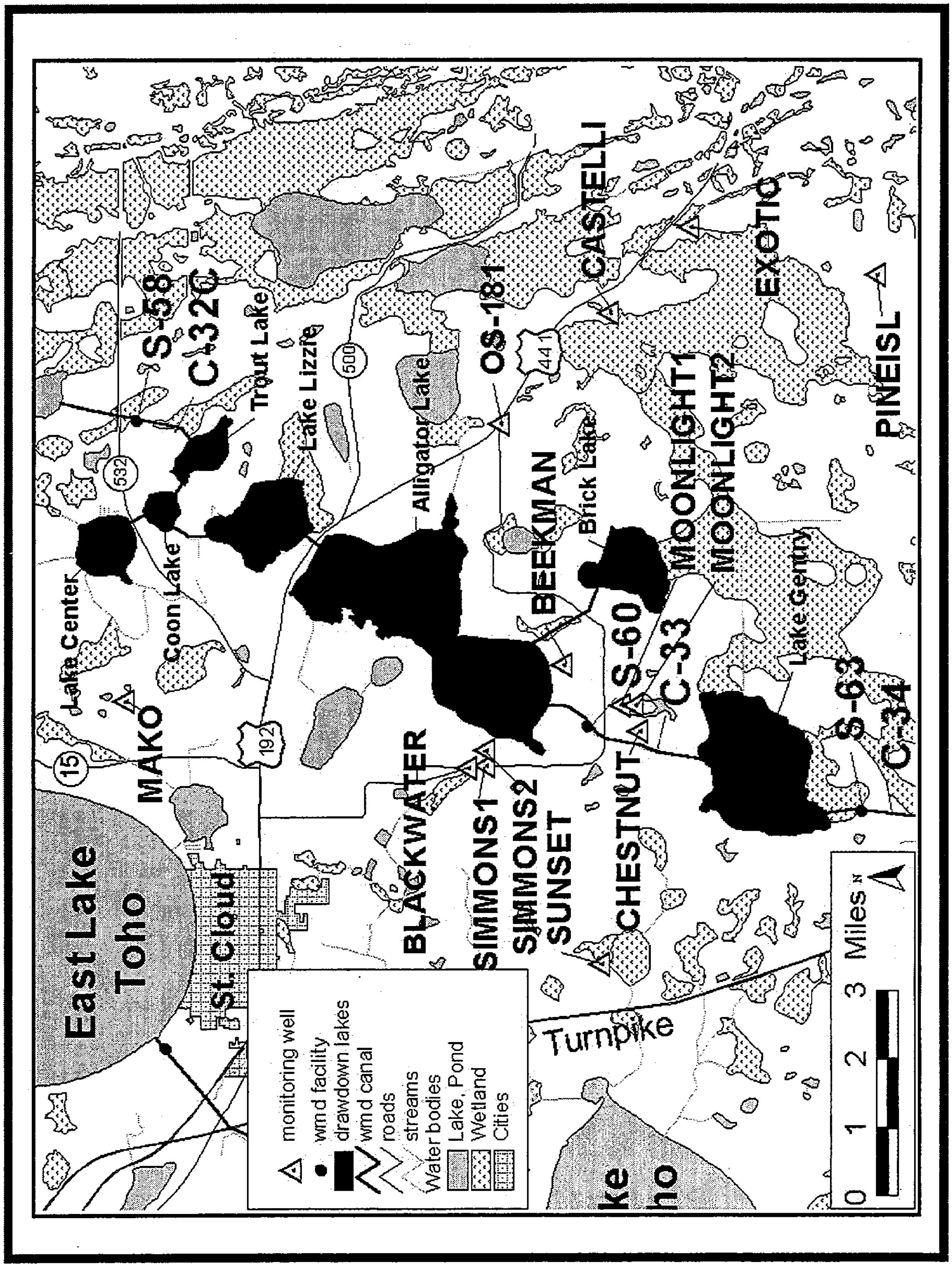
Model Calibration - Spring 1998

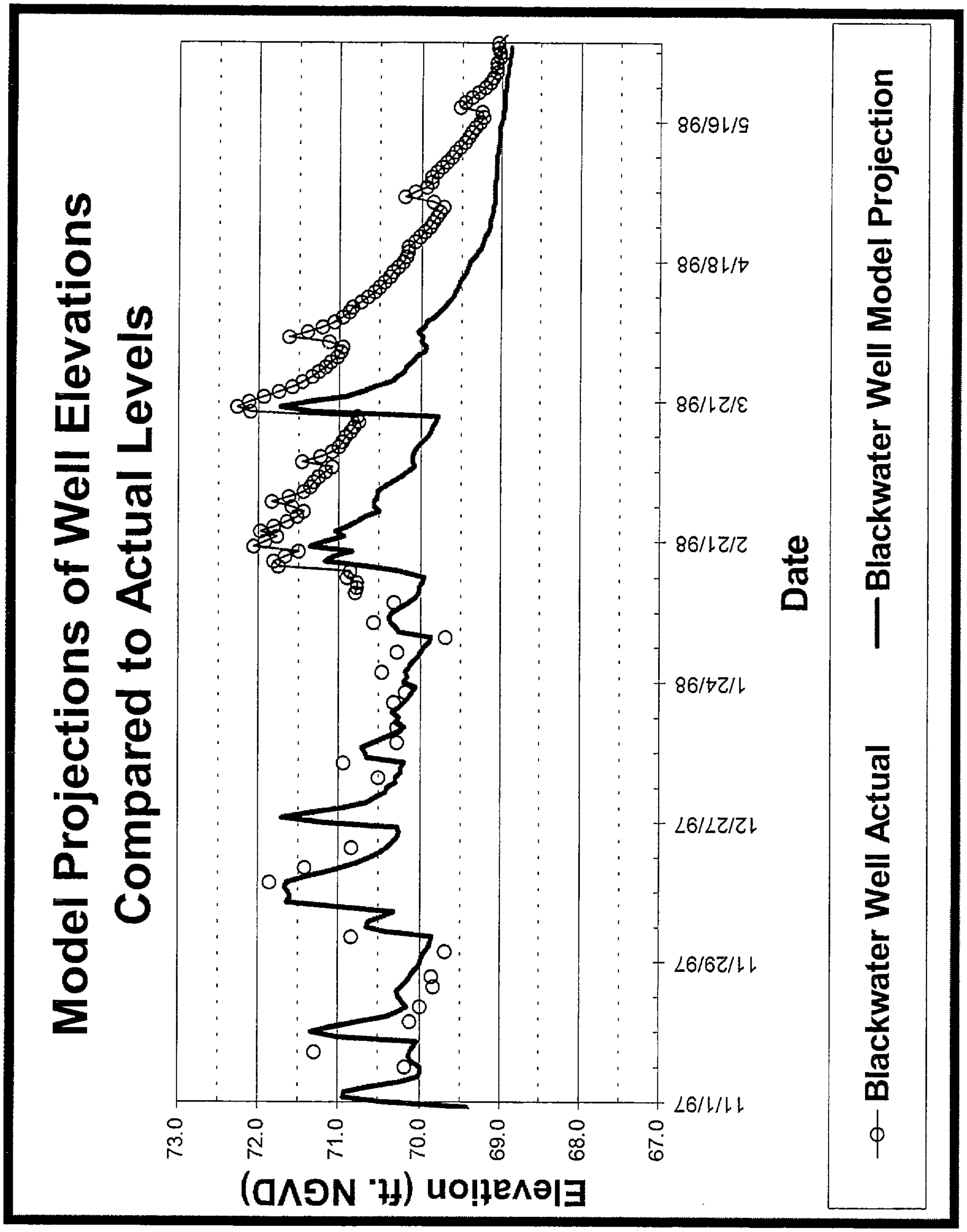
Model Calibration

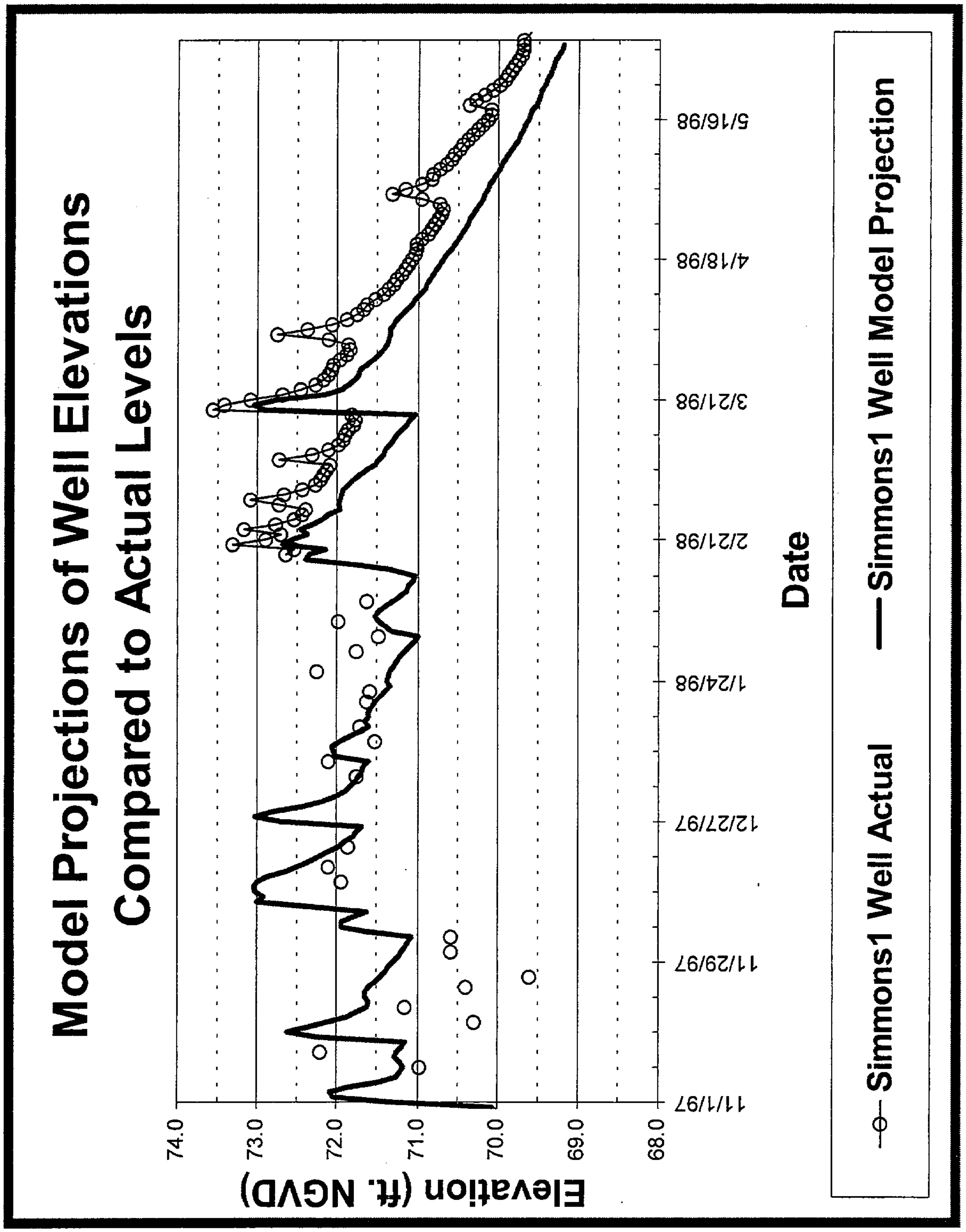
A model was constructed in the upper Kissimmee encompassing the area around the fish farms: (Mako, Blackwater, Moonlight, Castelli, Exotic & Exotic Acres). The model was constructed using the MIKESHE code. It allows for three-dimensional flow in the surficial aquifer system, which was modeled as a single layer, and one-dimensional flow (downward) in the unsaturated zone. The lakes (Alligator chain & Gentry) are input to the model as head boundaries. The stage in the lakes was varied daily according to measured stage readings from the headwater at S-60 (Alligator) and headwater as S-63 (Gentry). Buck Lake, which is separate from the Alligator chain, was input as a constant head boundary at elevation 65'.

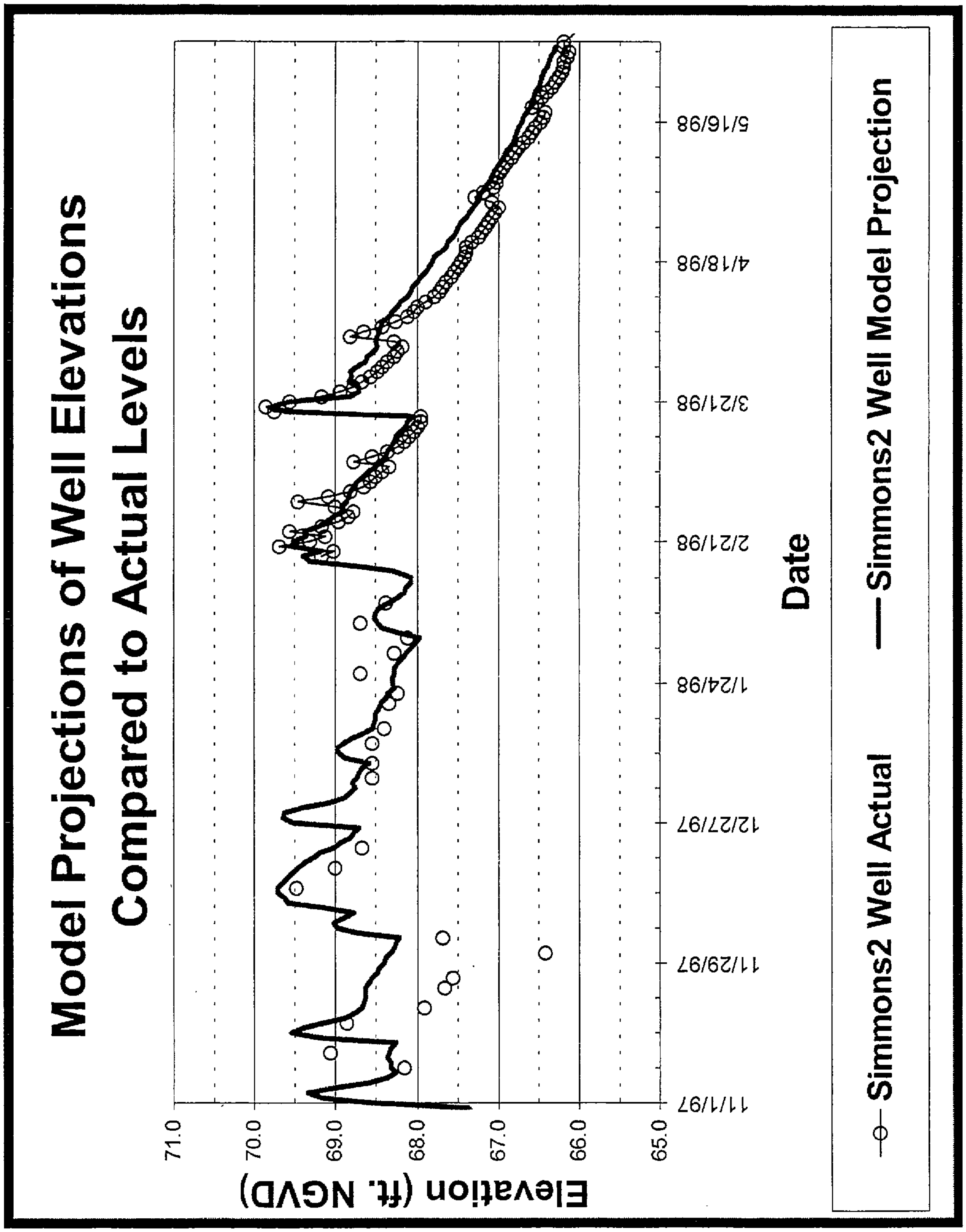
Soil-water retention curves necessary to performing the unsaturated zone budget were based on information provided in the Osceola county soil survey (generalized soil map). Initial hydraulic conductivities for the surficial aquifer were based on slug test data collected at each of the fish farms by the SFWMD in fall of 1997. Hydraulic conductivities were refined during calibration based on observed water levels from November, 1997 to June, 1998, a period which ranged from abnormally wet to abnormally dry. Water level observations were collected at monitoring wells installed at each of the fish farms, and four additional locations between the farms and the lakes. From November to February collections were made by hand, on an approximately bi-weekly basis. After February 9, continuous water-level recordings became available. One long-term monitor well, OS-181, having daily water-level readings, was also used in the calibration. The results of the calibration are shown via comparison of observed and predicted (modeled) water levels (see following graphs). Review of the hydrographs shows that the model does a reasonable job of replicating the pattern of observed water table fluctuations. The mean difference between observed and predicted water levels was generally within half a foot at all locations.

There is a drainage canal, which runs through the Blackwater property directly into Alligator Lake that was not originally described in the model. Subsequent modifications were made to include the canal in the model. The original discrepancies between observed and predicted water levels found at the Blackwater well can be ascribed to the local drainage effects of this canal. Once the drainage canal was included in the model, the discrepancies were greatly reduced. With regard to the Blackwater site, based on all the hydrograph results, the model was deemed sufficiently reliable for use in predictive simulations.

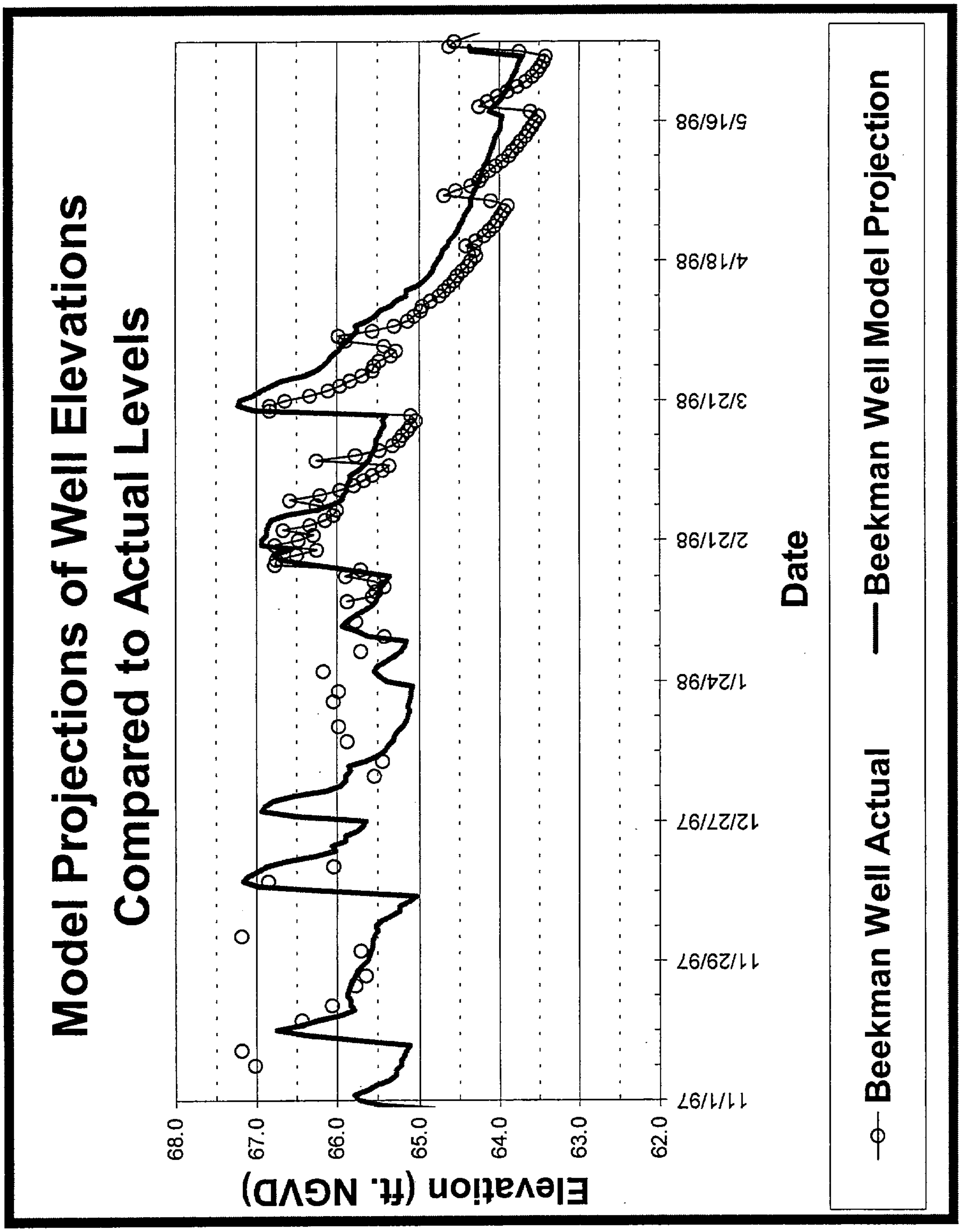

East Lake Toho
St. Cloud
MAKO
Lake Center
Coon Lake
S-58
C-32C
Trout Lake
Lake Lizzie
Alligator Lake
OS-181
CASTELLI
EXOTIC
PINEISL
BEEKMAN
Brick Lake
MOONLIGHT1
MOONLIGHT2
Lake Gentry
S-60
C-33
S-63
C-34
BLACKWATER
SIMMONS1
SIMMONS2
SUNSET
CHESTNUT
Turnpike
15
192
532
500
441
monitoring well
wmd facility
drawdown lakes
wmd canal
roads
streams
Water bodies
Lake, Pond
Wetland
Cities
0 1 2 3 Miles
N

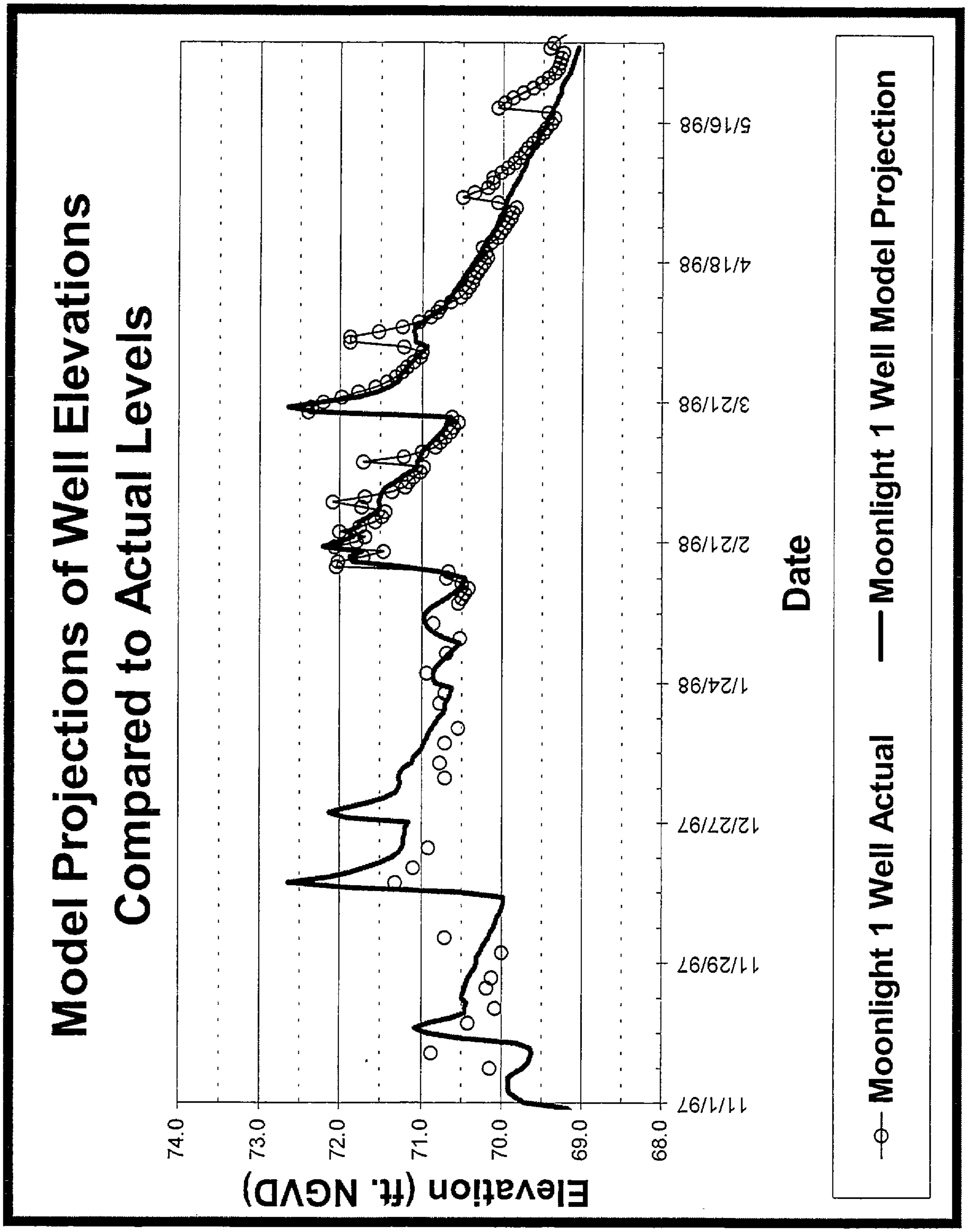

Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
73.0
72.0
71.0
70.0
69.0
68.0
67.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
Blackwater Well Actual
Blackwater Well Model Projection


Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
74.0
73.0
72.0
71.0
70.0
69.0
68.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
Simmons1 Well Actual
Simmons1 Well Model Projection

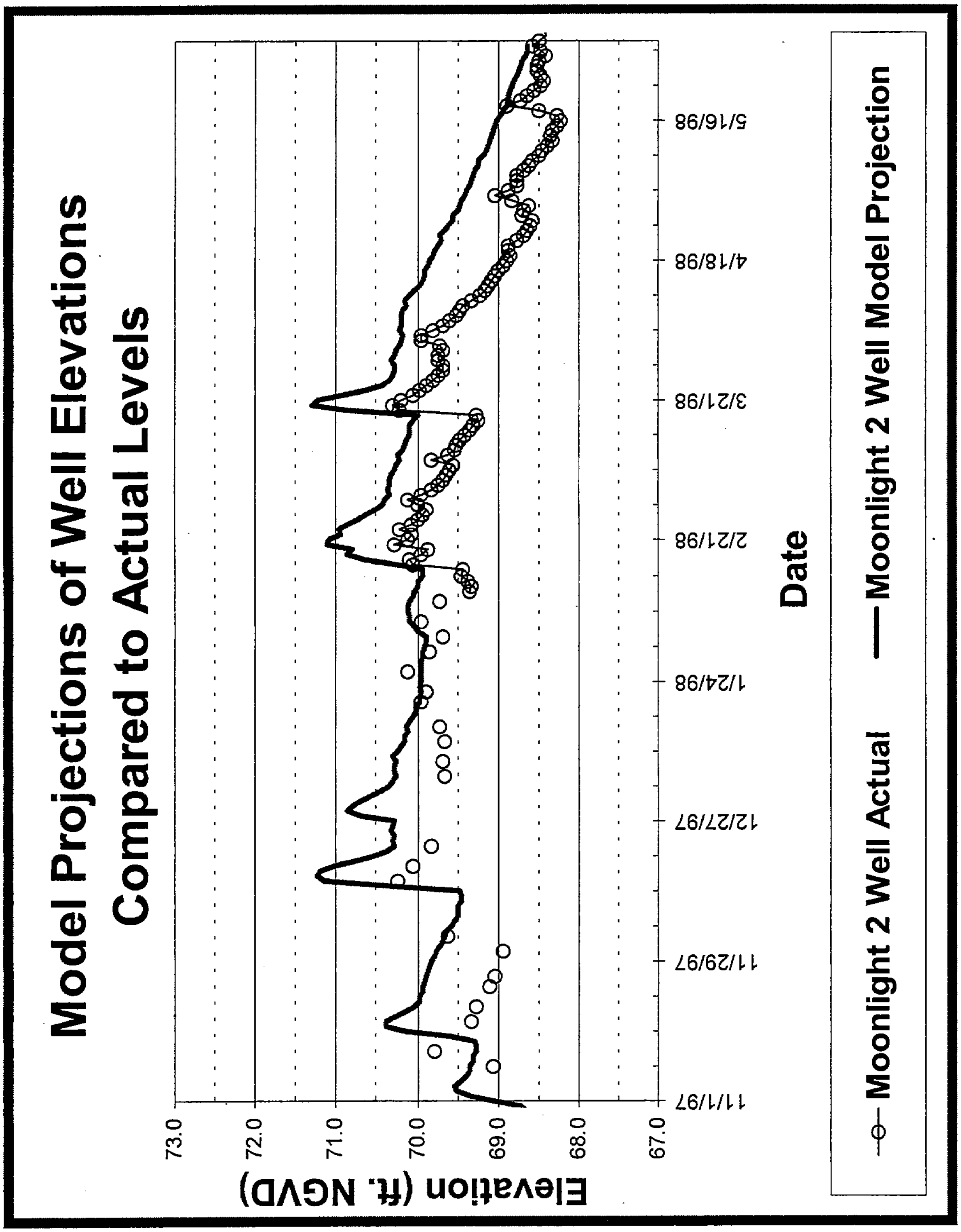


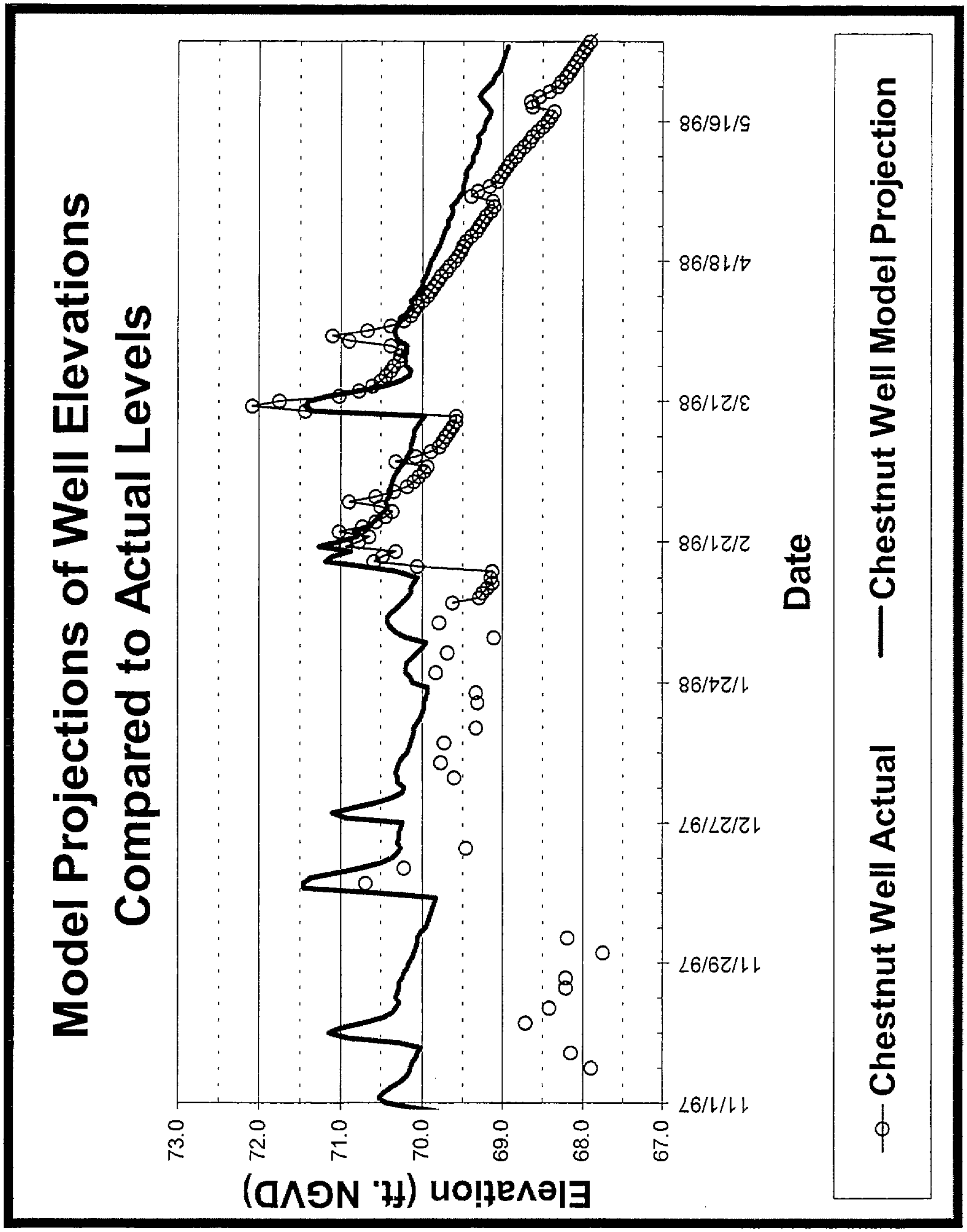
Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
71.0
70.0
69.0
68.0
67.0
66.0
65.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
Simmons2 Well Actual
Simmons2 Well Model Projection


Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
68.0
67.0
66.0
65.0
64.0
63.0
62.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
Beekman Well Actual
Beekman Well Model Projection

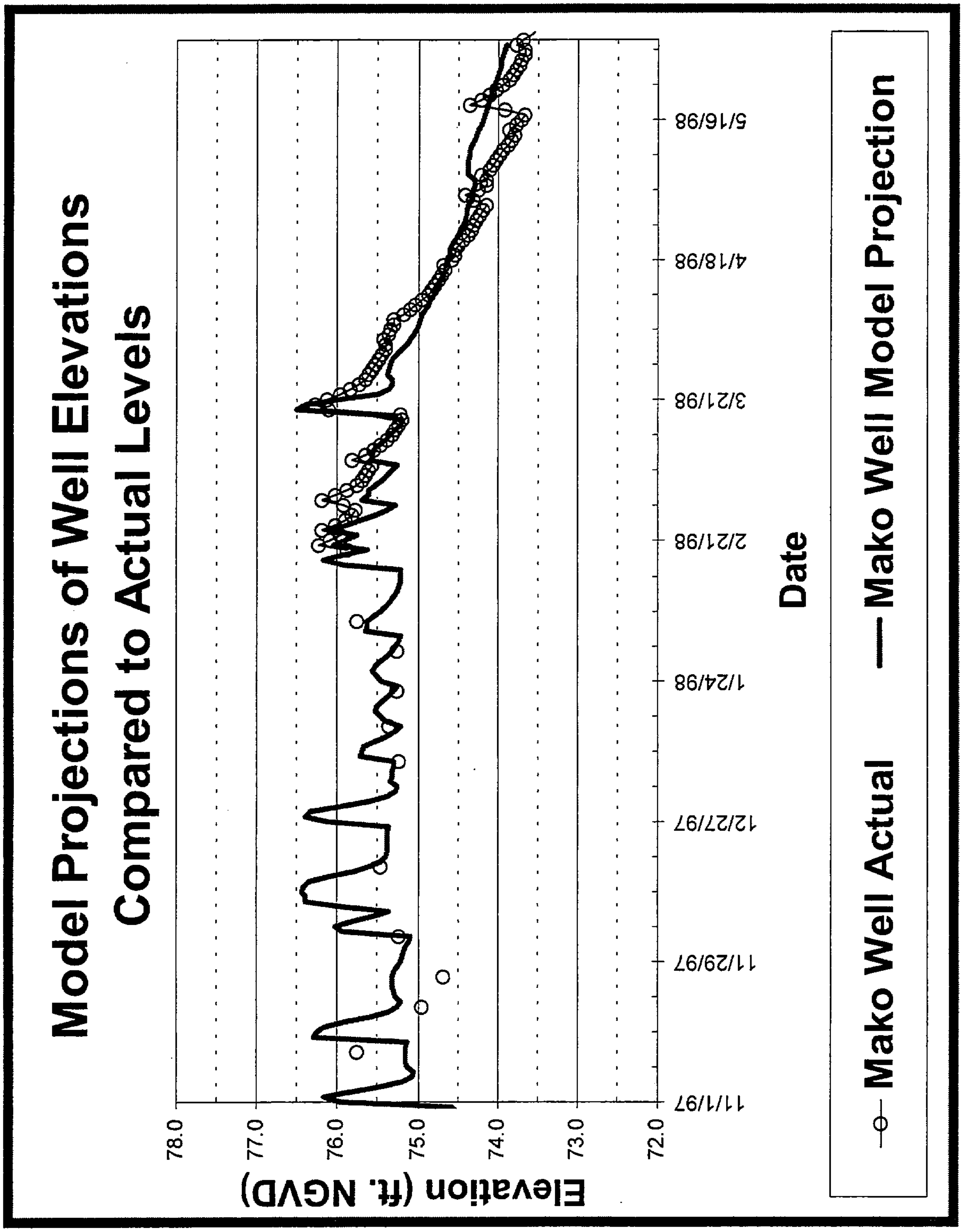


Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
74.0
73.0
72.0
71.0
70.0
69.0
68.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
Moonlight 1 Well Actual
Moonlight 1 Well Model Projection

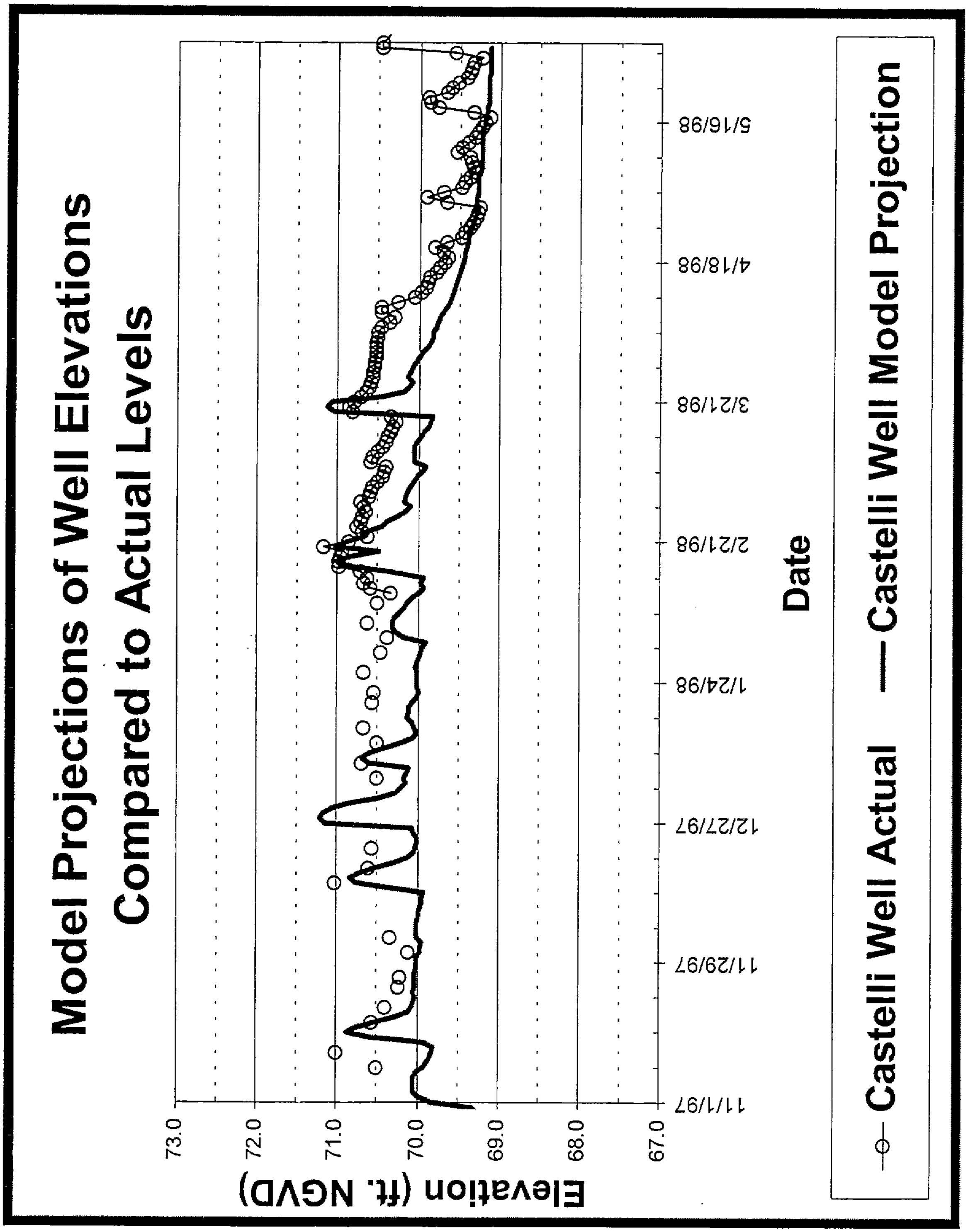

Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
73.0
72.0
71.0
70.0
69.0
68.0
67.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
Moonlight 2 Well Actual
Moonlight 2 Well Model Projection



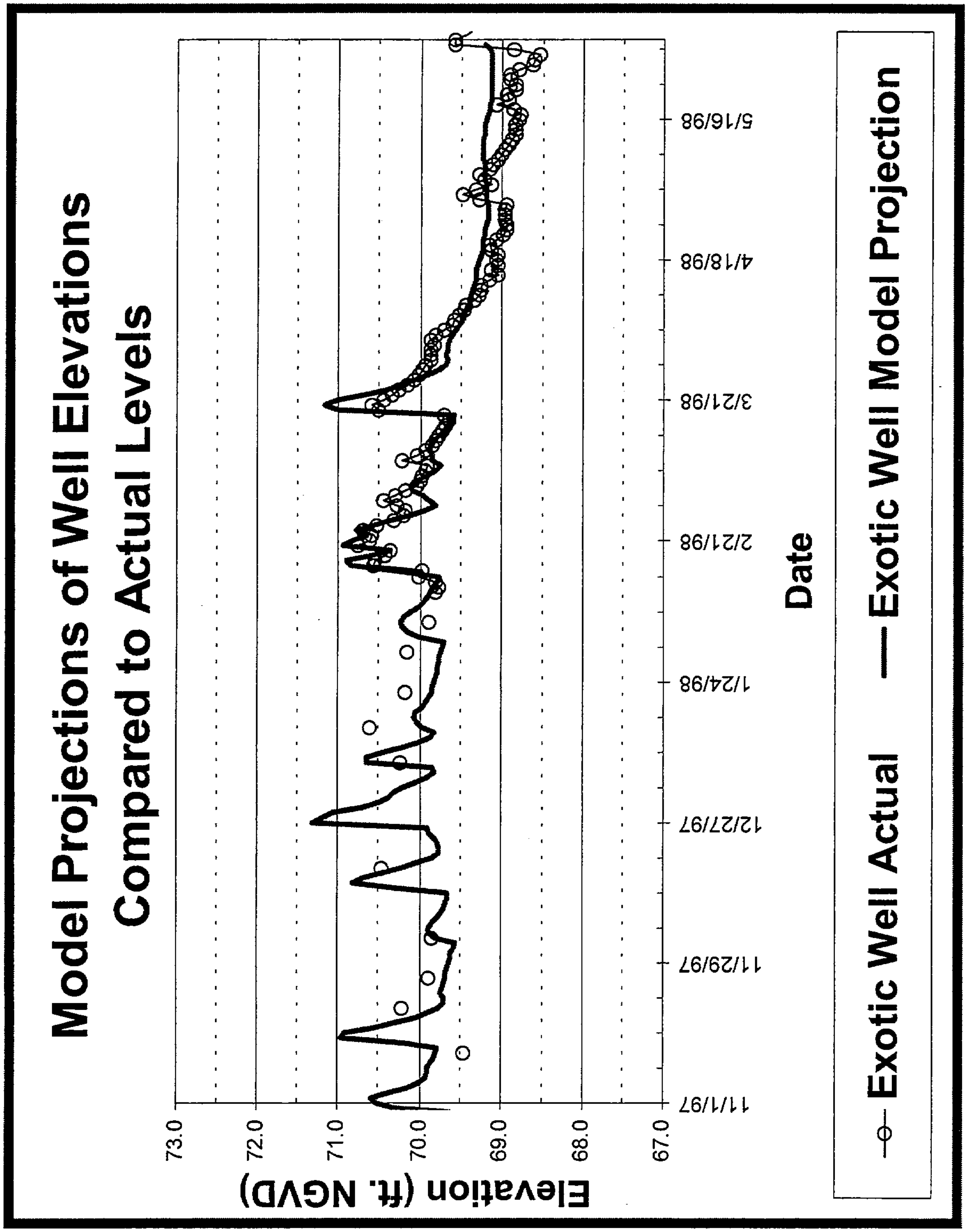
Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
73.0
72.0
71.0
70.0
69.0
68.0
67.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
Chestnut Well Actual
Chestnut Well Model Projection

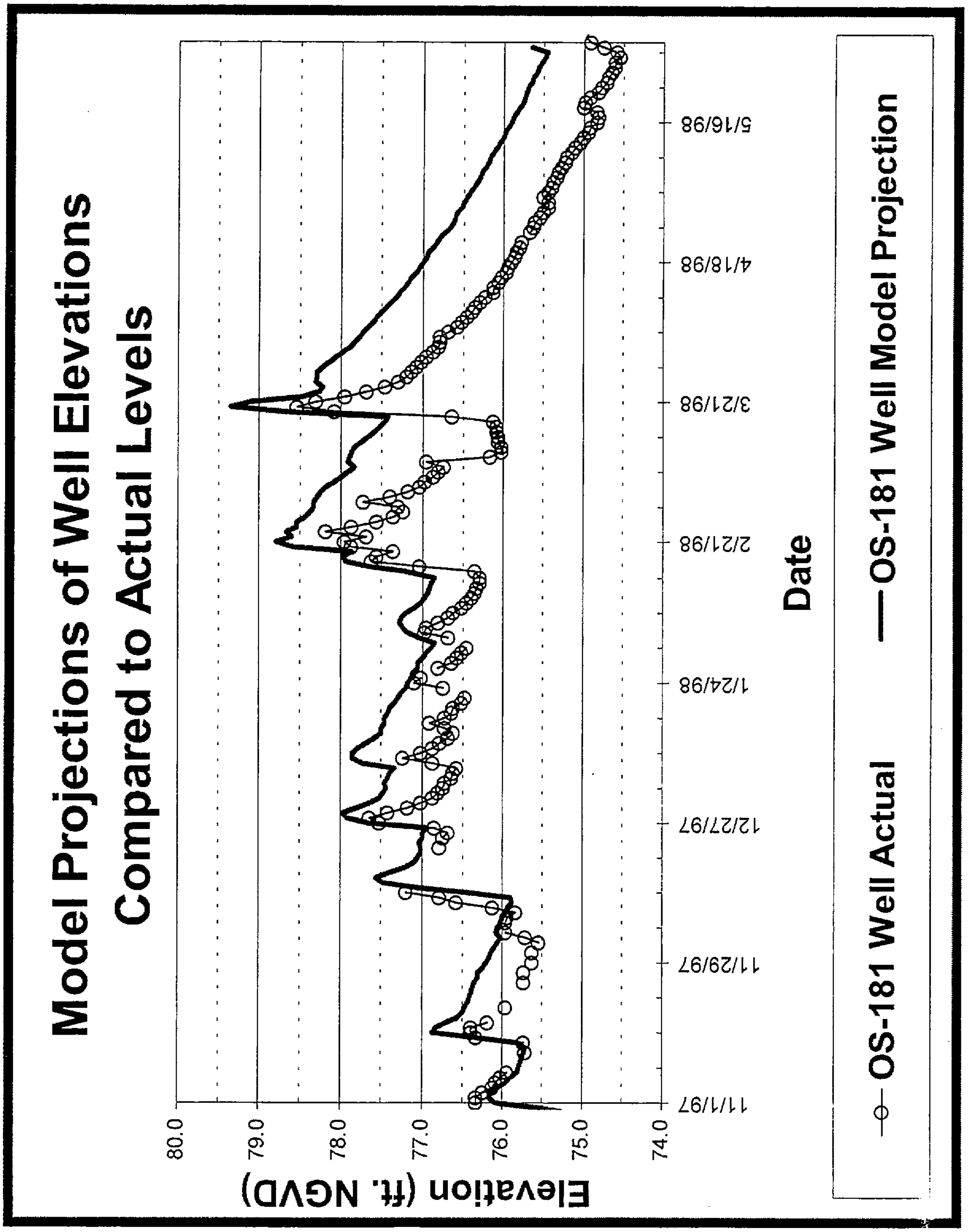


Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
78.0
77.0
76.0
75.0
74.0
73.0
72.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
Mako Well Actual
Mako Well Model Projection



Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
73.0
72.0
71.0
70.0
69.0
68.0
67.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
Castelli Well Actual
Castelli Well Model Projection

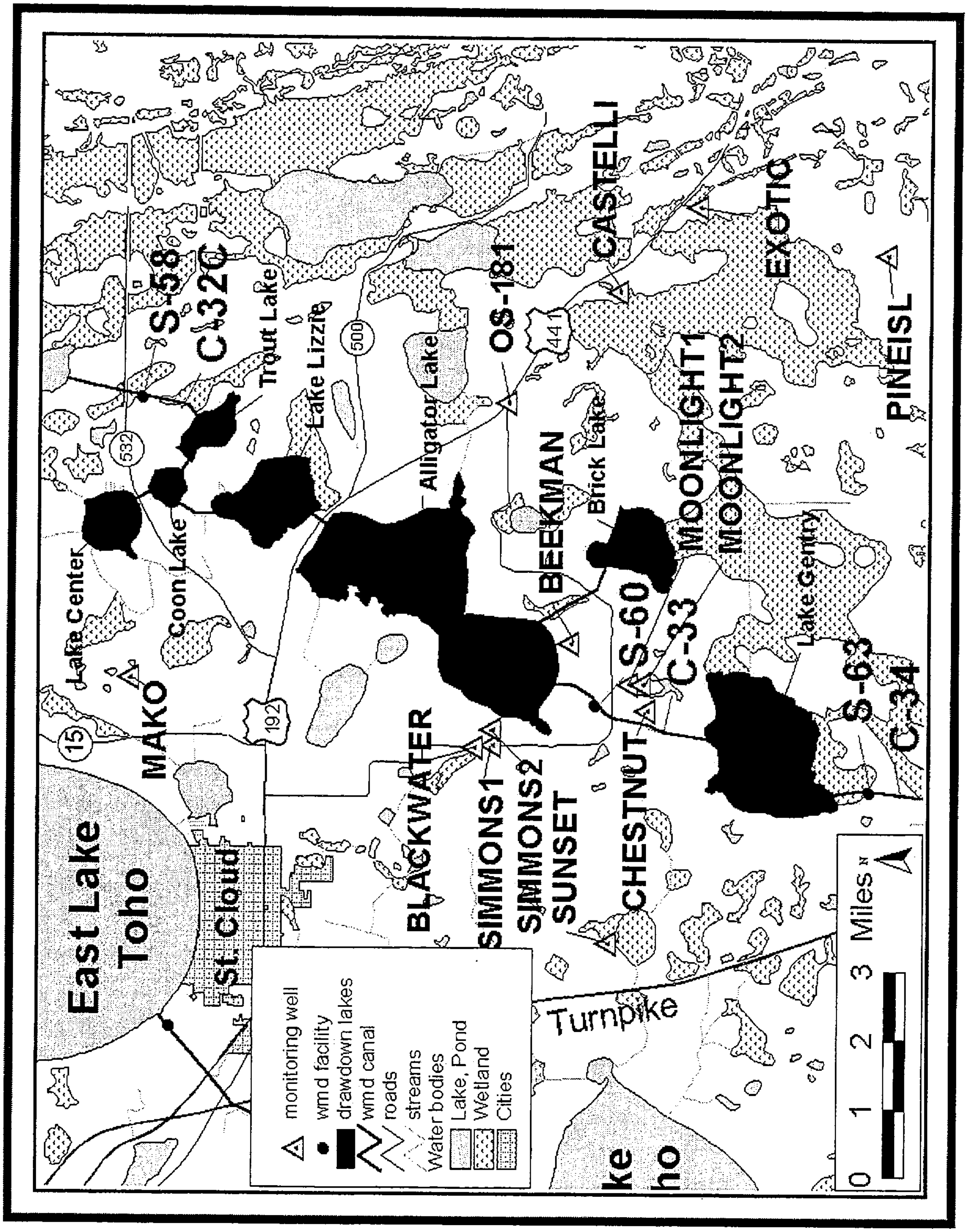

Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
73.0
72.0
71.0
70.0
69.0
68.0
67.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
Exotic Well Actual
Exotic Well Model Projection

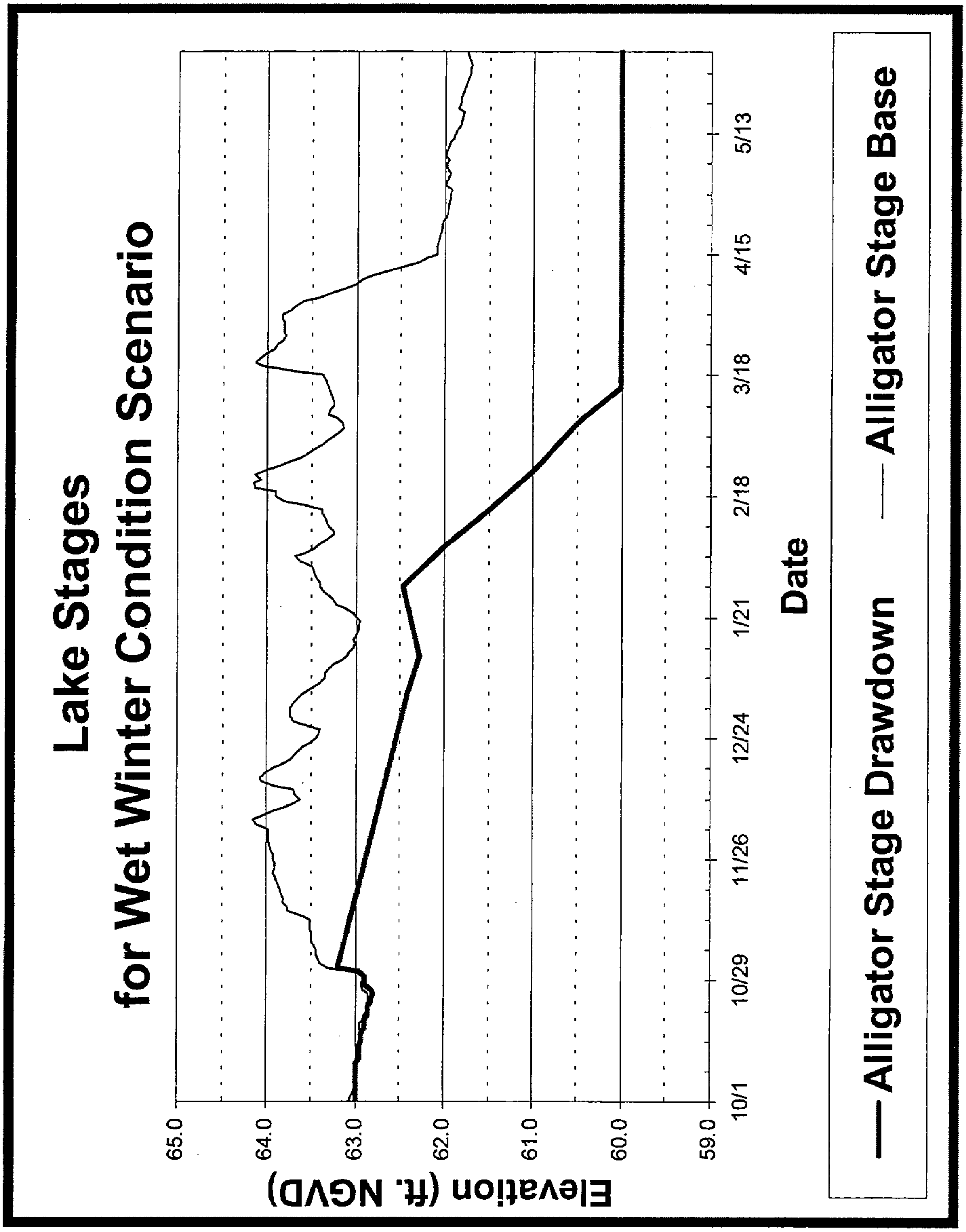

Model Projections of Well Elevations
Compared to Actual Levels
Elevation (ft. NGVD)
80.0
79.0
78.0
77.0
76.0
75.0
74.0
11/1/97
11/29/97
12/27/97
1/24/98
2/21/98
3/21/98
4/18/98
5/16/98
Date
OS-181 Well Actual
OS-181 Well Model Projection

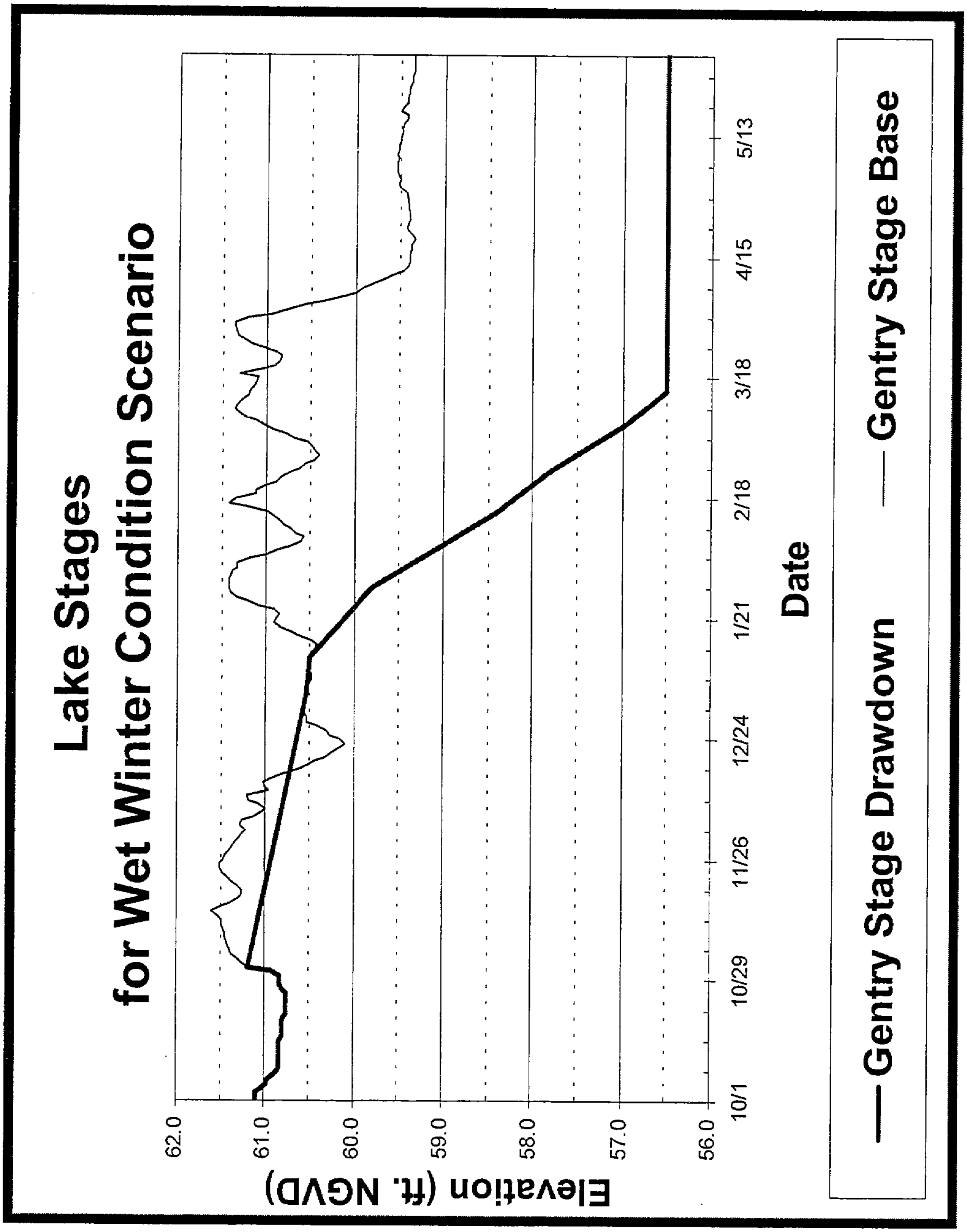
Appendix J. Model Results - Wet Winter Condition Scenario

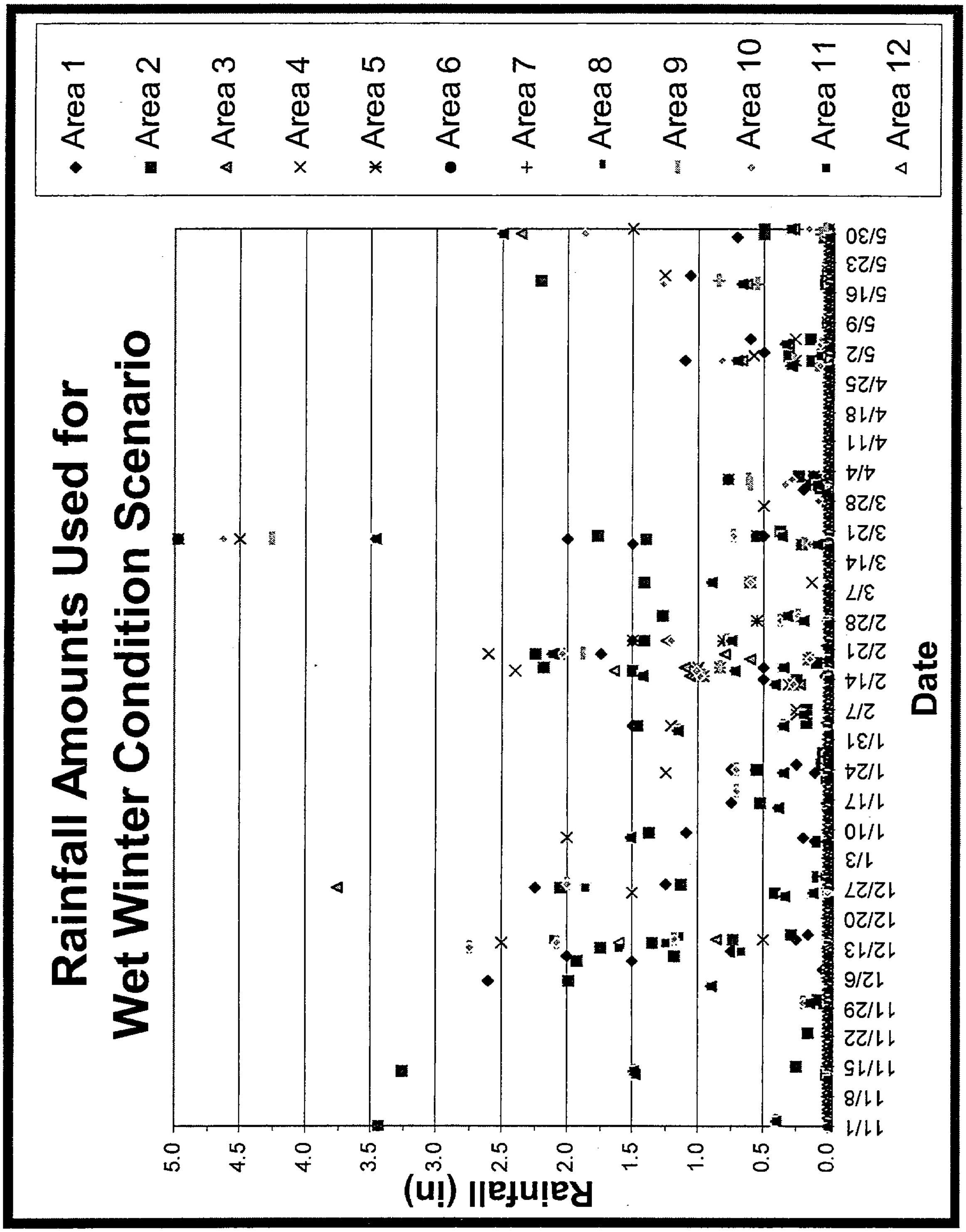
Model Results - Wet Winter Condition Scenario

The calibrated model was used to predict the impact to the water table aquifer. The Wet Winter Condition Scenario utilizes the weather conditions experienced in 1997-98. The weather conditions go from a very wet period to a very dry period. The following pages show the lake stage and rainfall used for this modeling scenario. Following that is a series of graphs showing predicted well stage, with and without a drawdown. The difference between the two lines is the predicted impact due to the drawdown.

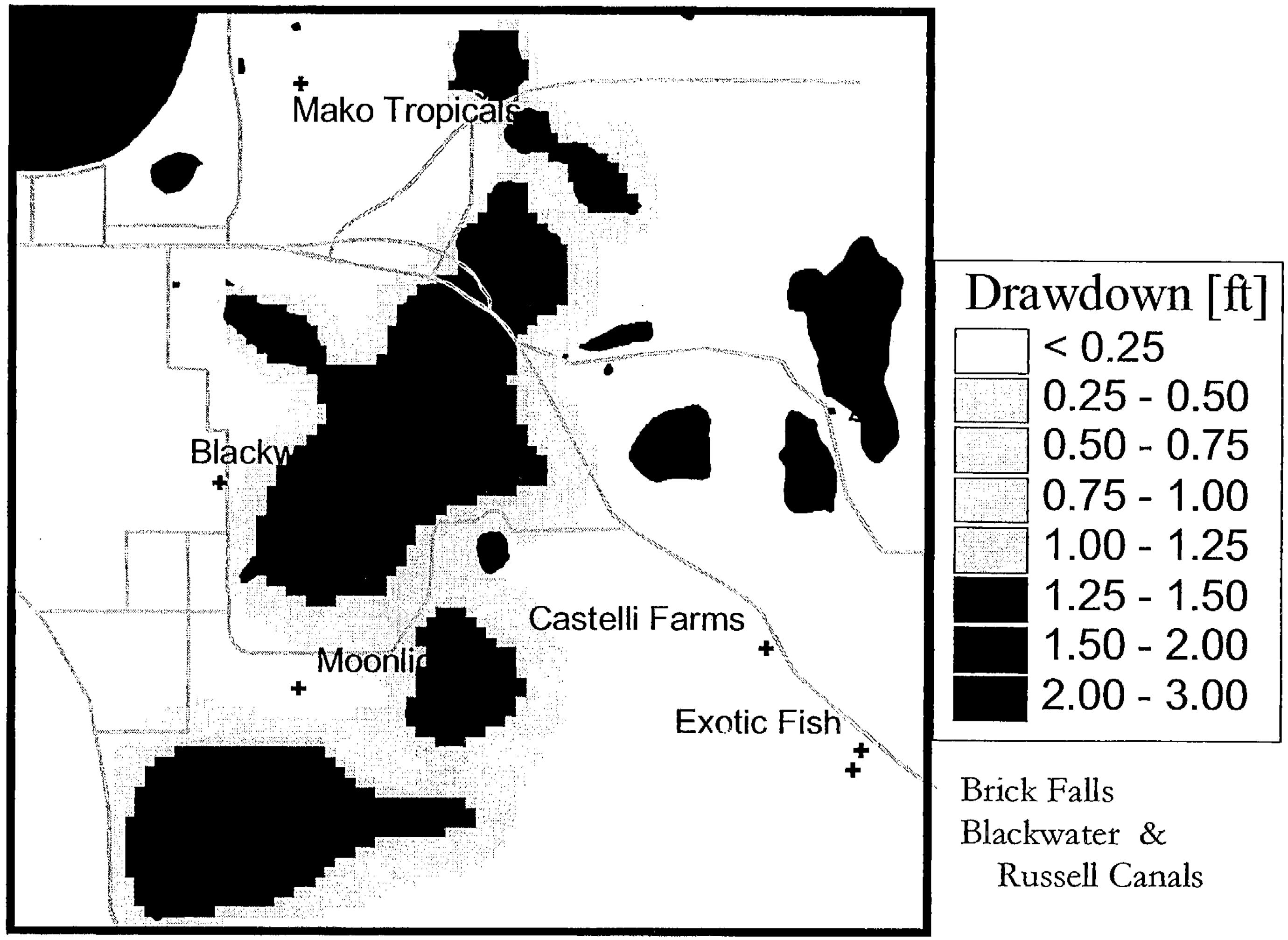

East Lake Toho
St Cloud
MAKO
Lake Center
Coon Lake
S-58
C-32C
Trout Lake
Lake Lizzie
Alligator Lake
OS-181
CASTELLI
EXOTIC
PINEISL
BEEKMAN
Brick Lake
MOONLIGHT1
MOONLIGHT2
Lake Gentry
S-60
C-33
S-63
C-34
BLACKWATER
SIMMONS1
SIMMONS2
SUNSET
CHESTNUT
Turnpike
15
192
532
500
441
monitoring well
wmd facility
drawdown lakes
wmd canal
roads
streams
Water bodies
Lake, Pond
Wetland
Cities
0 1 2 3 Miles
N

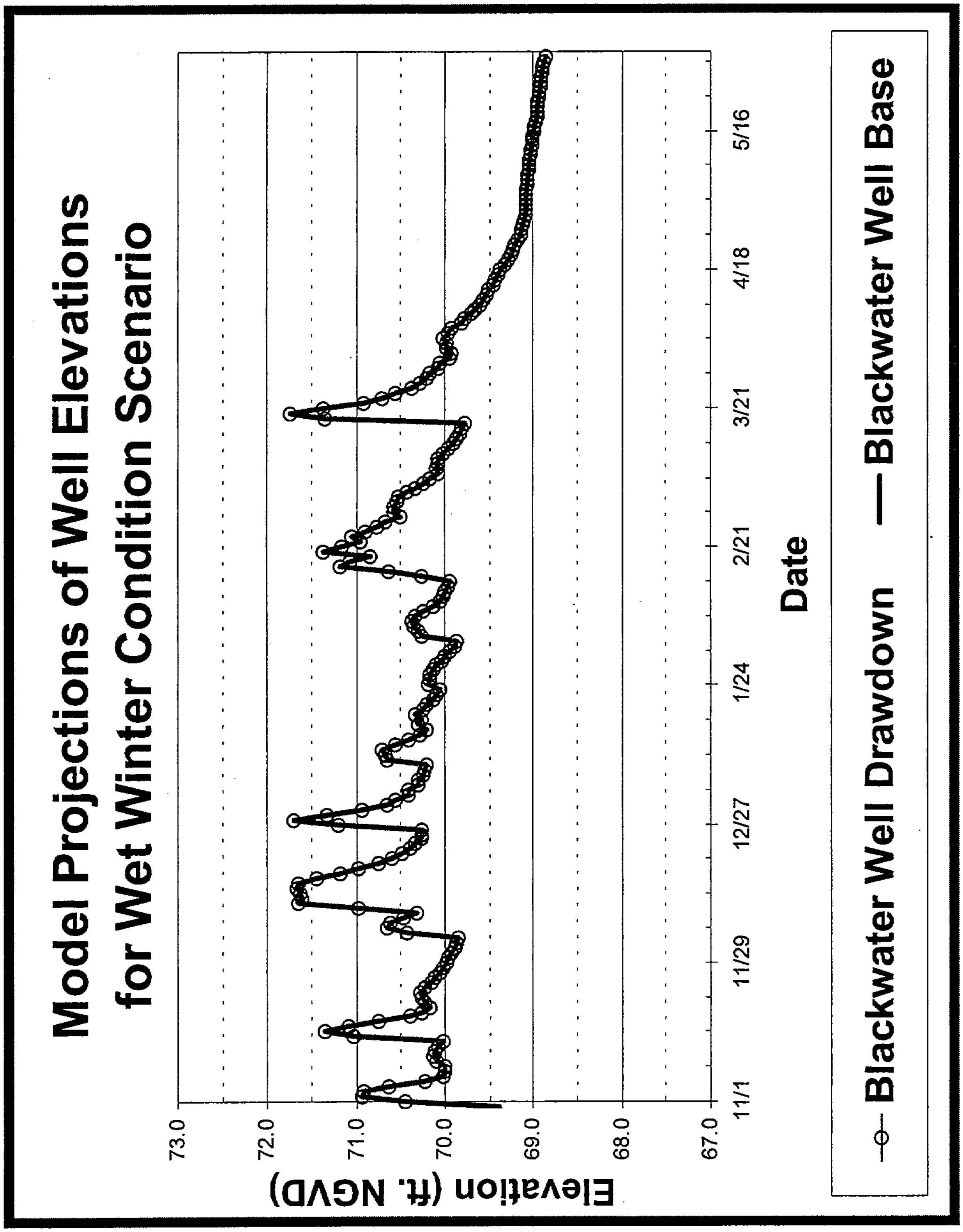

Lake Stages
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
65.0
64.0
63.0
62.0
61.0
60.0
59.0
10/1
10/29
11/26
12/24
1/21
2/18
3/18
4/15
5/13
Date
Alligator Stage Drawdown
Alligator Stage Base

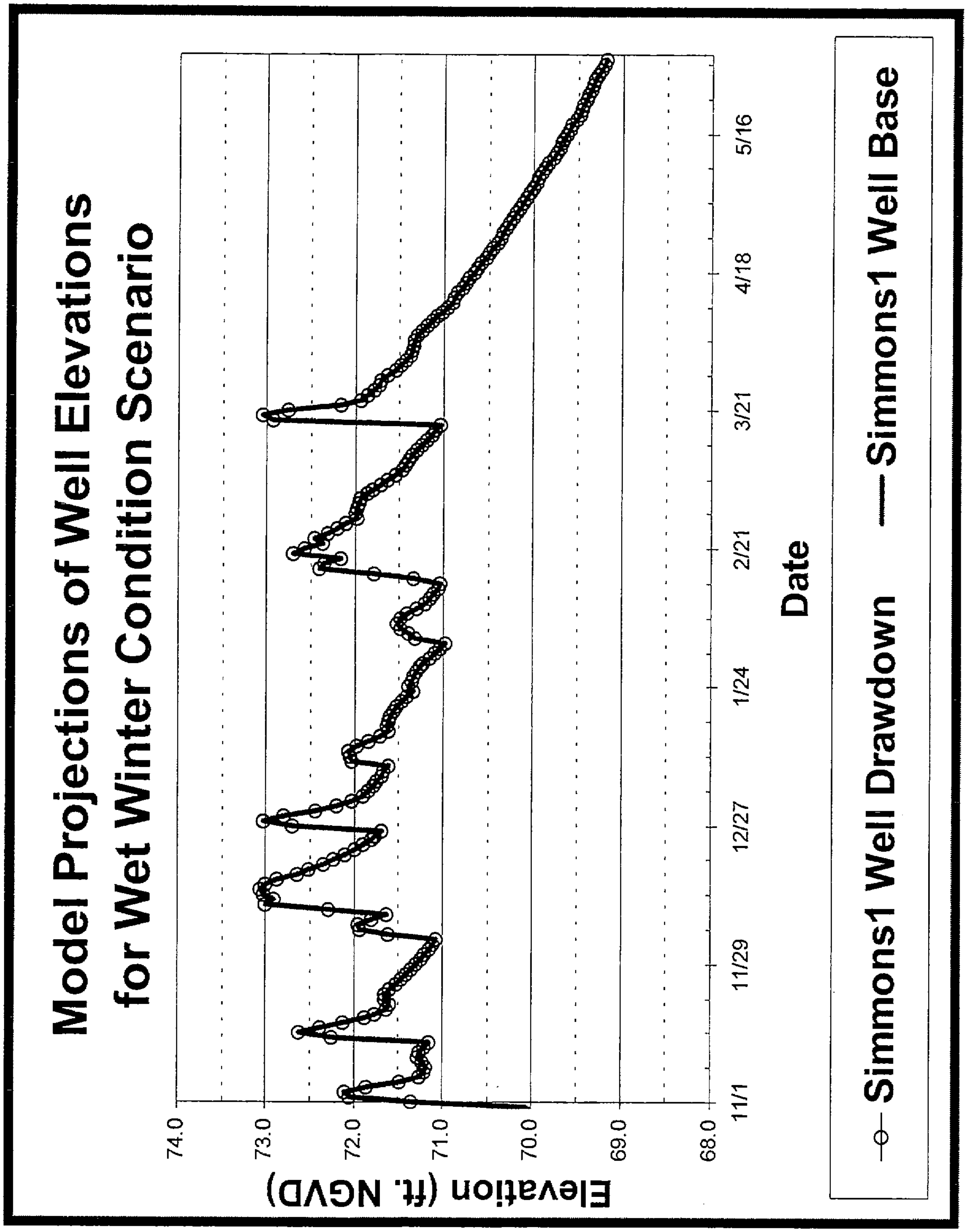

Lake Stages
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
62.0
61.0
60.0
59.0
58.0
57.0
56.0
10/1
10/29
11/26
12/24
1/21
2/18
3/18
4/15
5/13
Date
Gentry Stage Drawdown
Gentry Stage Base

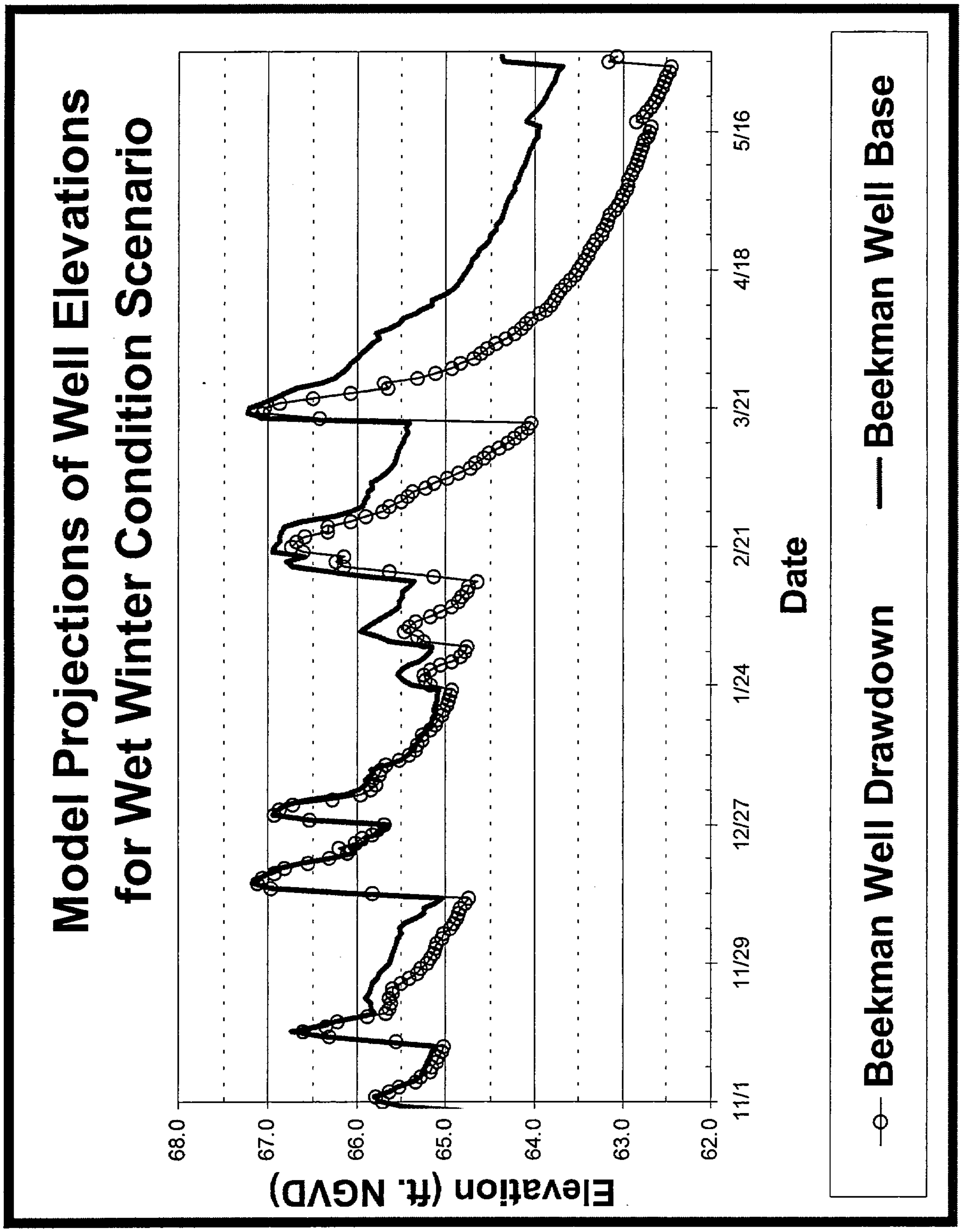

Rainfall Amounts Used for
Wet Winter Condition Scenario
Rainfall (in)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
11/1
11/8
11/15
11/22
11/29
12/6
12/13
12/20
12/27
1/3
1/10
1/17
1/24
1/31
2/7
2/14
2/21
2/28
3/7
3/14
3/21
3/28
4/4
4/11
4/18
4/25
5/2
5/9
5/16
5/23
5/30
Date
Area 1
Area 2
Area 3
Area 4
Area 5
Area 6
Area 7
Area 8
Area 9
Area 10
Area 11
Area 12

Projected Impact of Lake Drawdown on the Water Table Aquifer

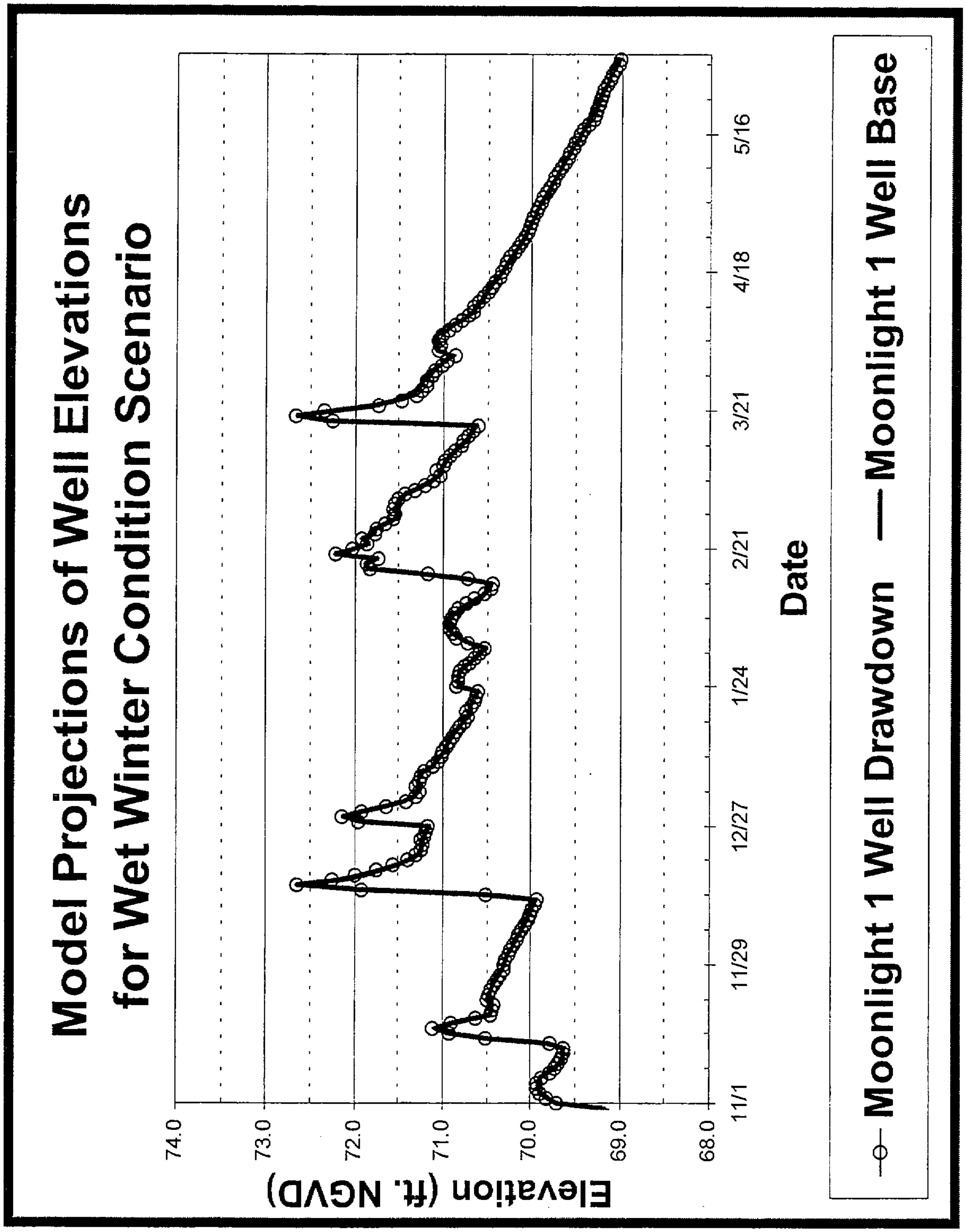


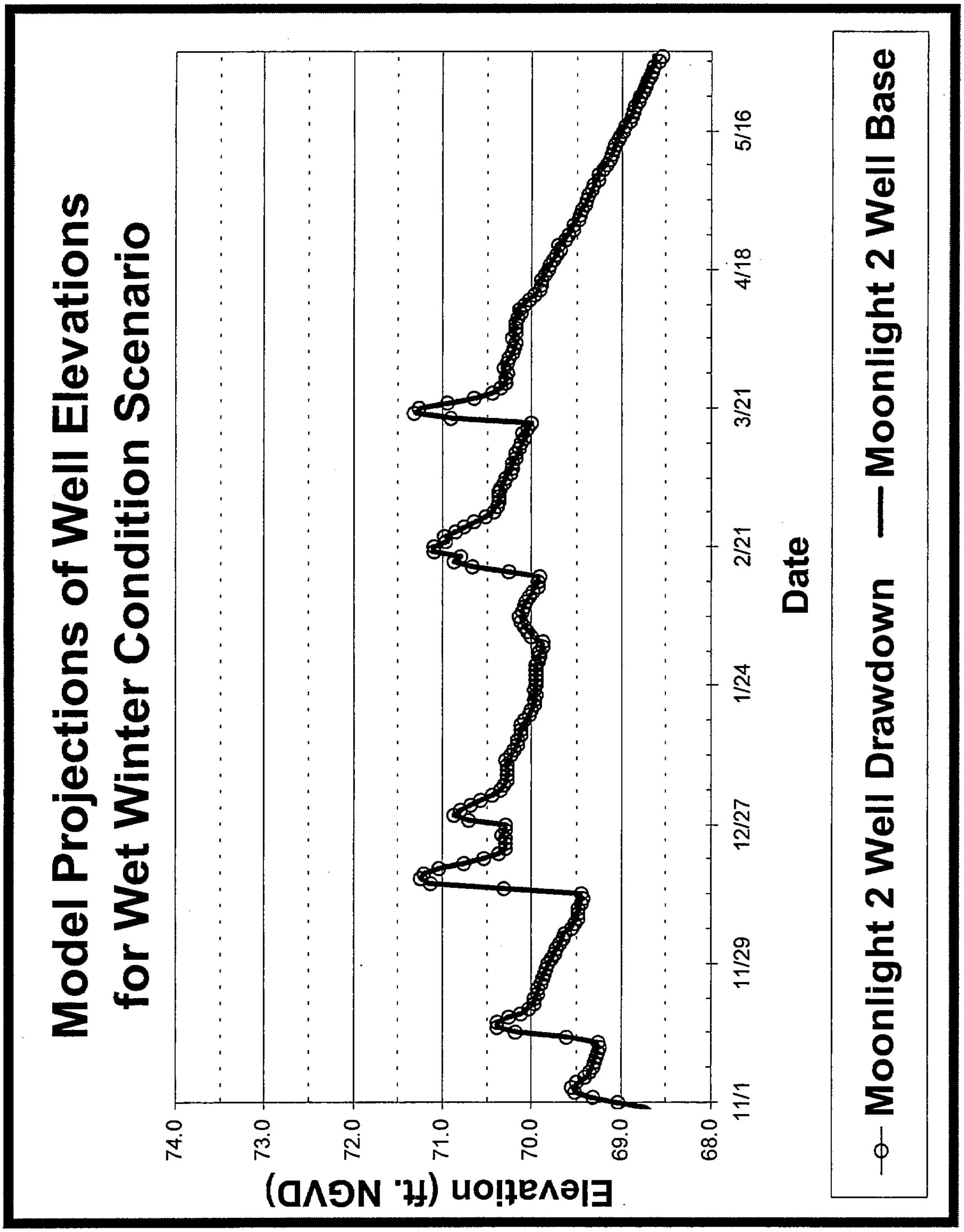

Model Projections of Well Elevations
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
73.0
72.0
71.0
70.0
69.0
68.0
67.0
11/1
11/29
12/27
1/24
2/21
3/21
4/18
5/16
Date
Blackwater Well Drawdown
Blackwater Well Base


Model Projections of Well Elevations
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
74.0
73.0
72.0
71.0
70.0
69.0
68.0
11/1
11/29
12/27
1/24
2/21
3/21
4/18
5/16
Date
Simmons1 Well Drawdown
Simmons1 Well Base

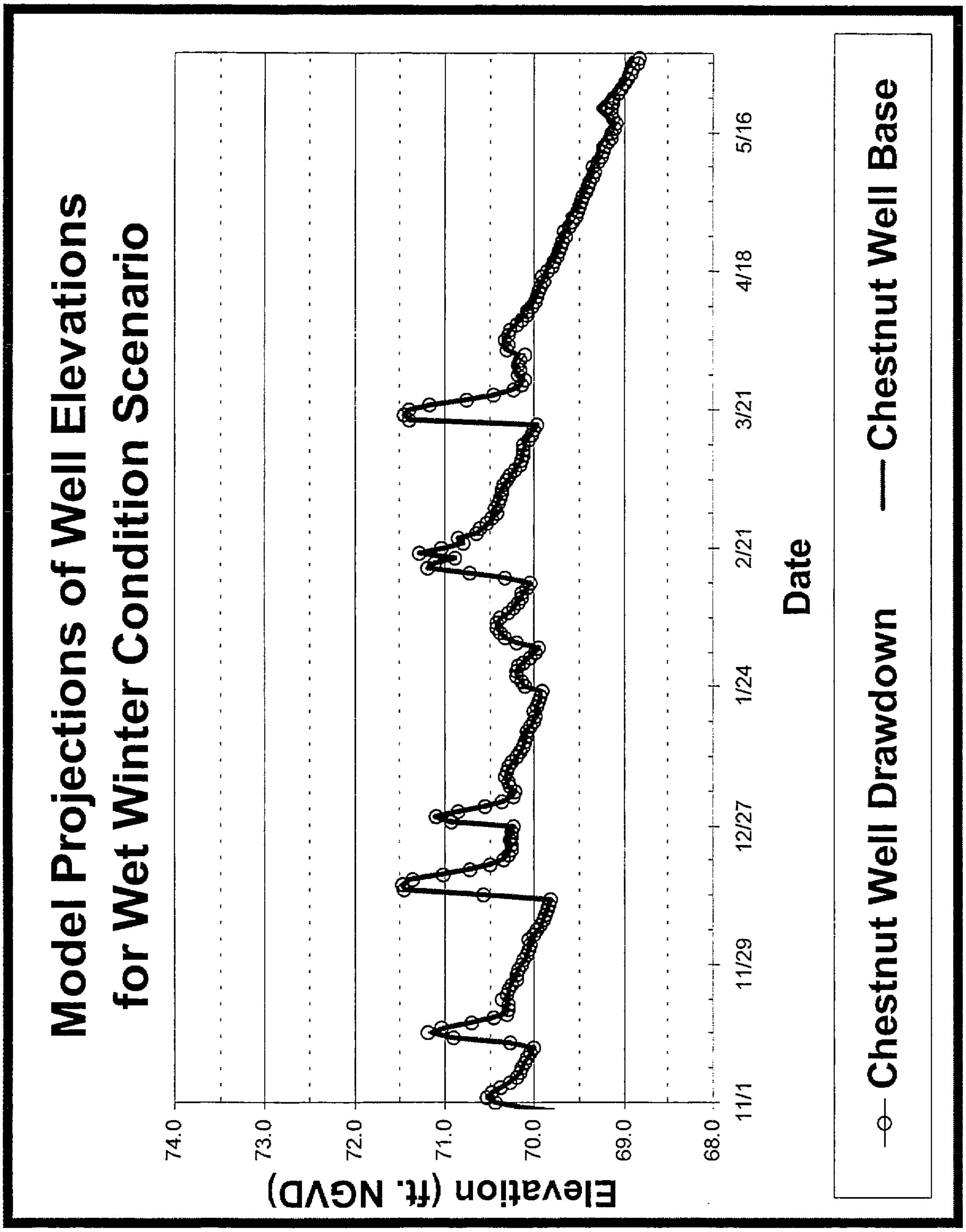


Model Projections of Well Elevations
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
68.0
67.0
66.0
65.0
64.0
63.0
62.0
11/1
11/29
12/27
1/24
2/21
3/21
4/18
5/16
Date
Beekman Well Drawdown
Beekman Well Base

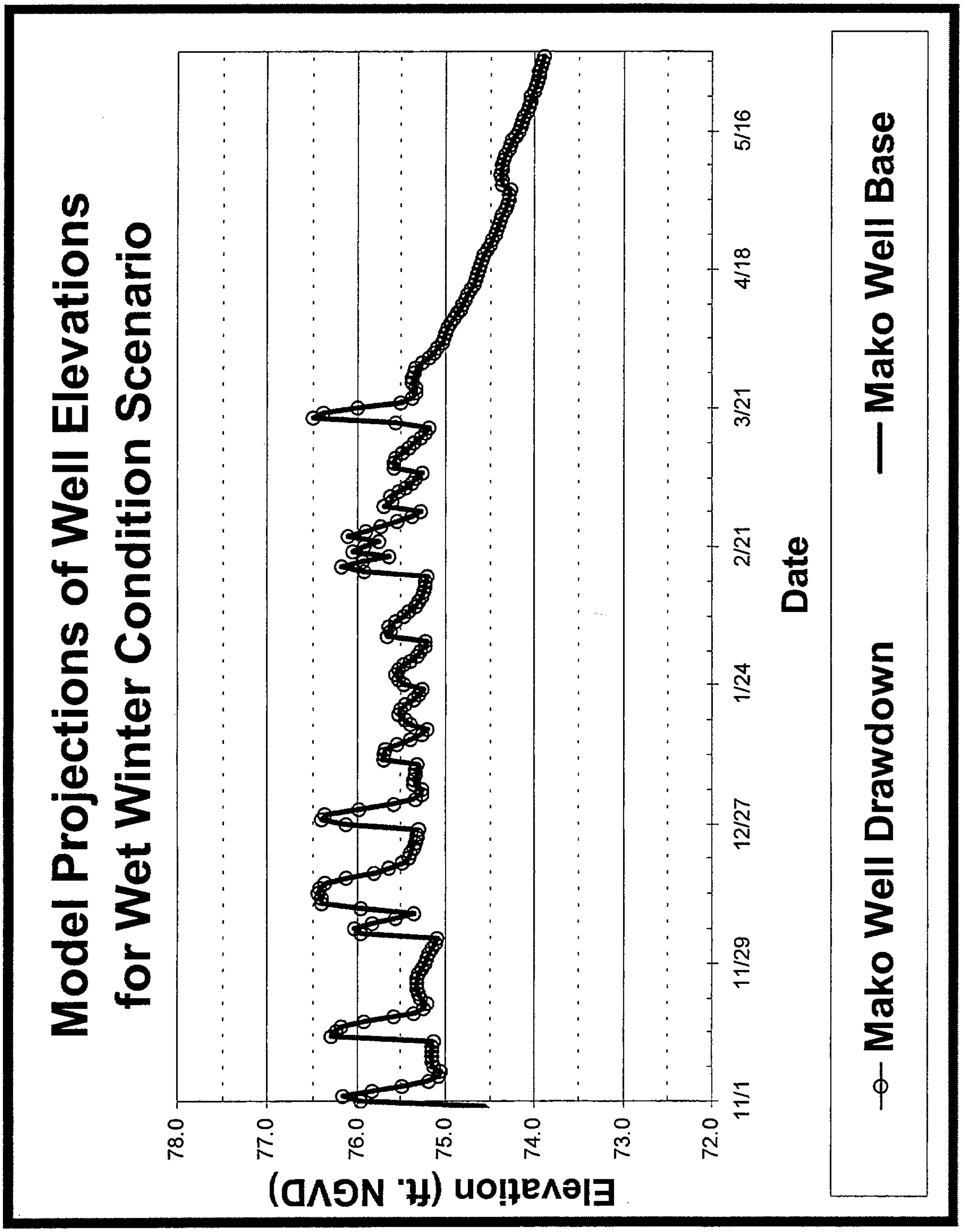

Model Projections of Well Elevations
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
74.0
73.0
72.0
71.0
70.0
69.0
68.0
11/1
11/29
12/27
1/24
2/21
3/21
4/18
5/16
Date
Moonlight 1 Well Drawdown
Moonlight 1 Well Base

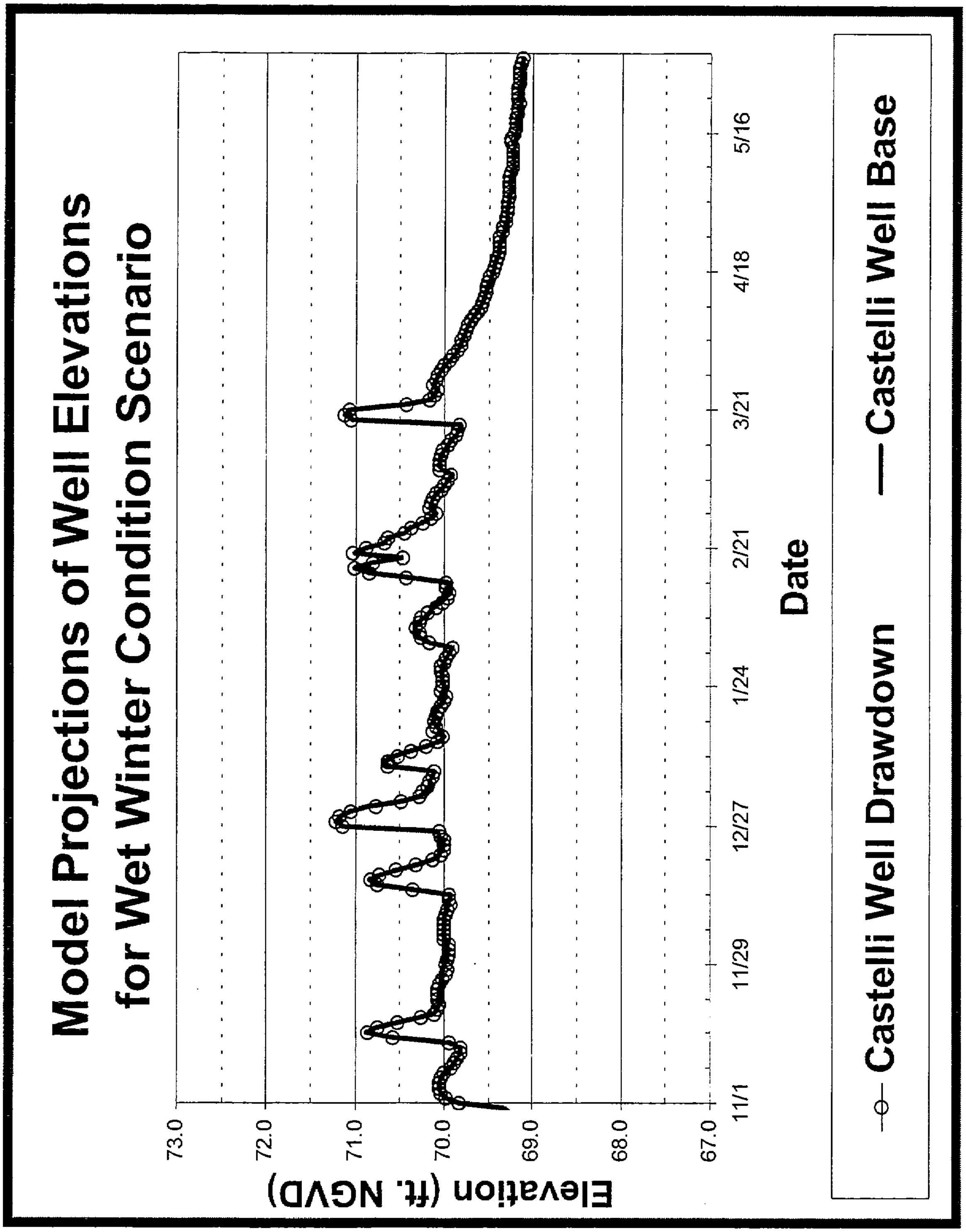


Model Projections of Well Elevations
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
74.0
73.0
72.0
71.0
70.0
69.0
68.0
11/1
11/29
12/27
1/24
2/21
3/21
4/18
5/16
Date
Moonlight 2 Well Drawdown
Moonlight 2 Well Base

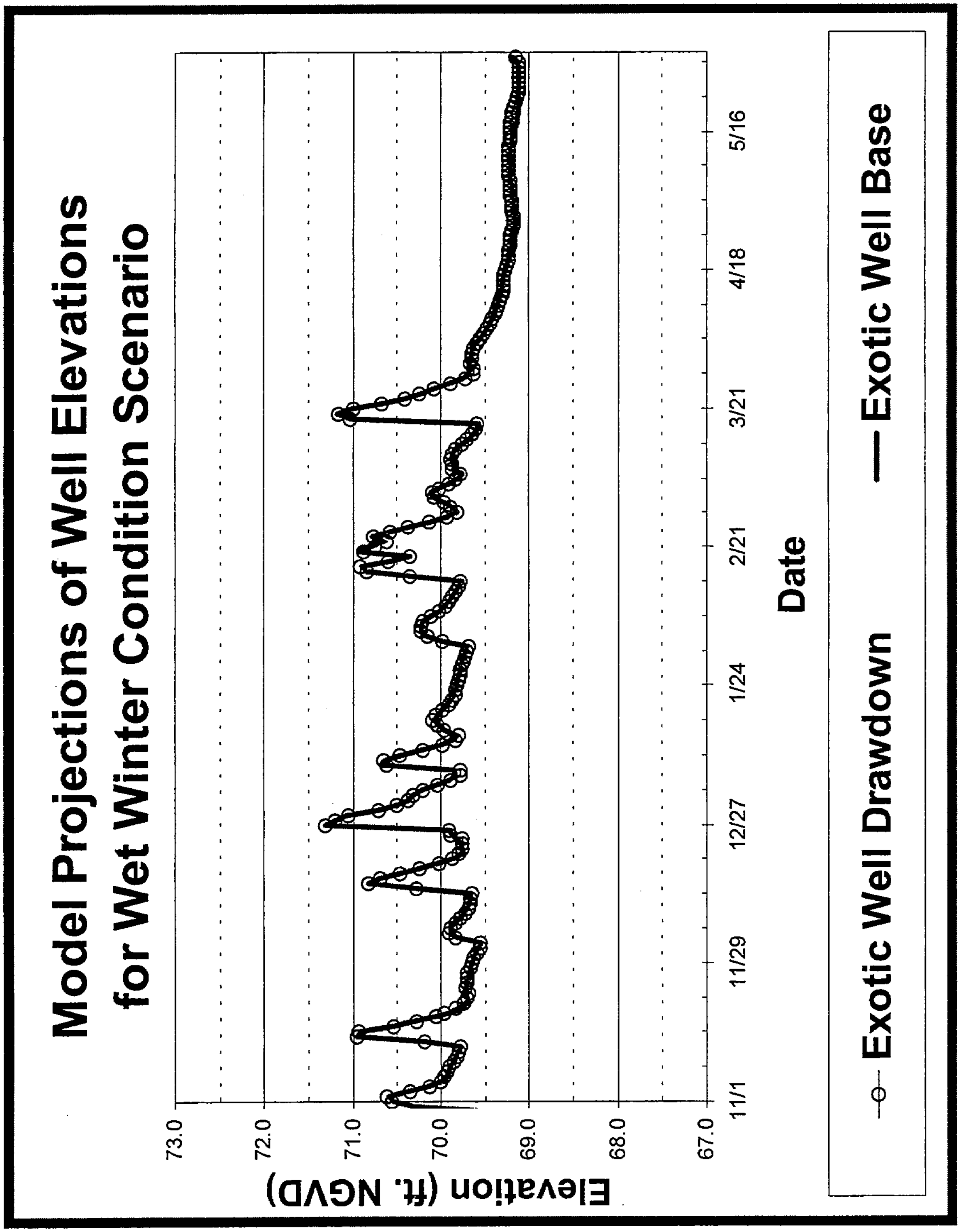


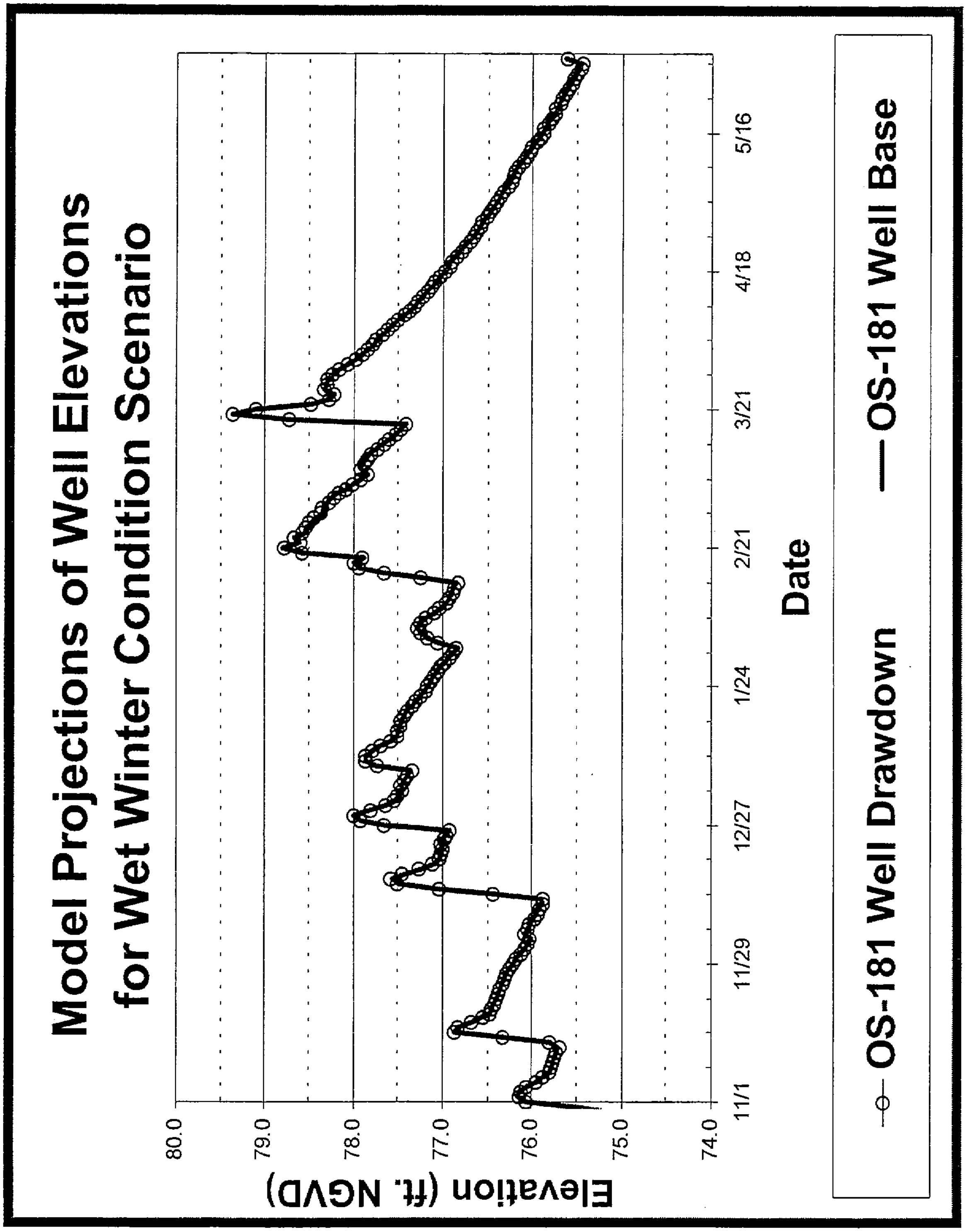
Model Projections of Well Elevations
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
74.0
73.0
72.0
71.0
70.0
69.0
68.0
11/1
11/29
12/27
1/24
2/21
3/21
4/18
5/16
Date
Chestnut Well Drawdown
Chestnut Well Base


Model Projections of Well Elevations
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
78.0
77.0
76.0
75.0
74.0
73.0
72.0
11/1
11/29
12/27
1/24
2/21
3/21
4/18
5/16
Date
Mako Well Drawdown
Mako Well Base



Model Projections of Well Elevations
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
73.0
72.0
71.0
70.0
69.0
68.0
67.0
11/1
11/29
12/27
1/24
2/21
3/21
4/18
5/16
Date
Castelli Well Drawdown
Castelli Well Base


Model Projections of Well Elevations
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
73.0
72.0
71.0
70.0
69.0
68.0
67.0
11/1
11/29
12/27
1/24
2/21
3/21
4/18
5/16
Date
Exotic Well Drawdown
Exotic Well Base


Model Projections of Well Elevations
for Wet Winter Condition Scenario
Elevation (ft. NGVD)
80.0
79.0
78.0
77.0
76.0
75.0
74.0
11/1
11/29
12/27
1/24
2/21
3/21
4/18
5/16
Date
OS-181 Well Drawdown
OS-181 Well Base

Appendix K. Model Results - Typical Condition Scenario

Model Results - Typical Condition Scenario

The calibrated model was used to predict the impact to the water table aquifer. The Typical Condition Scenario utilizes the rain and stage conditions experienced in the area for a "typical year". The time period selected was 1988-89. The scenario time frame uses the rain and stage data from August 1988 to June 1989. The following pages show the lake stage and rainfall used for this modeling scenario. Following that is a series of graphs showing predicted well stage, with and without a drawdown. The difference between the two lines is the predicted impact due to the drawdown.